A. S. R. E. Members Study Industrial History at Ford's Greenfield Village

Delegates to the national convention of the A. S. R. E. in Detroit two weeks ago spent the second afternoon of their stay in a visit to Greenfield Village, the settlement that Henry Ford has crammed with mementos of early American life. (1) At the registration desk in the museum. The cases are filled with historical relics. (2) Cornerstone of the museum. Thomas A. Edison "autographed" the wet concrete, into which was thrust a spade belonging to Luther Burbank. (3) A corner of the museum, devoted to Colonial furniture. (4) The blacksmith's forge.

(1) Cobbler's corner in the museum. The last may be seen in the foreground, fastened to the wooden bench. (2) A scene in the chapel. (3) History-laden relics in another section of the museum, protected by ropes from prying hands. (3) An old English ale mug undergoes a practical test from one of the A. S. R. E. delegates. Note to those not present: the mug was empty.

(1) Miss Estelle Spoo, of the Michigan theater, who came down to entertain A.S.R.E. men at the News' Fiesta. (2, 3, and 4) One of the spots which visitors found most fascinating was the tintype studio, presided over by the Old Daguerrotyper, a master of his craft. In the first picture is Prof. Hugh E. Keeler of the University of Michigan, president of the A.S.R.E.'s Detroit section. (5) The candid camera profiles President A. H. Eustis of Virginia Smelting Co., and a companion, against a window of one of the Village's coaches.

Engineers had a lot of fun riding around Greenfield Village in the old-time coaches which are available to visitors. (1) Ready to go. One delegate gets in, another is ready to follow, while the third checks his watch to see if he has time for a quick trip before that mid-afternoon appointment. (2) Loading up another coach, this time one of the rear-entrance type. (3) As soon as the south side of the gentleman in the light trousers going north settles down, this coach will be on its way, too.

(1) Main Street in the Village. Close up is the museum, with a replica of Independence Hall farther down the street. The editor's Auburn is parked right against a "No Parking" sign. (2) Another house in the Village, half-hidden by trees, comfortable and inviting in the spring sunshine. (3) Past and present, in photography. The editor and his candid camera pose against the background of the old tintype studio. This picture was taken with an Electric Refrigeration News camera by one of the delegates.

62

A621.05
E383

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS. MEMBER PERIODICAL PUBLISHERS INSTITUTE.

VOL. 15, NO. 7, SERIAL NO. 325
ISSUED EVERY WEEK

Entered as second-class matter Aug. 1, 1927

DETROIT, MICHIGAN, JUNE 12, 1935

Copyright, 1935, by Business News Pub. Co.

THREE DOLLARS PER YEAR
TEN CENTS PER COPY

Electric Kitchen Drive Proposed By Zimmerman

Edison Electric Institute Asked to Back Bureau Promoting Plan

ATLANTIC CITY, N. J.—For the promotion through national publicity and advertising of the complete electric kitchen, the establishment of a national bureau (to be sponsored by the Edison Electric Institute) was proposed by P. B. Zimmerman, manager of the appliance division of the General Electric Co., Cleveland, in a speech delivered before the third annual convention of the Edison Electric Institute here.

"Some will immediately say that we have had electric kitchens for years," Mr. Zimmerman said. "It is true we have had pictures of pretty kitchens, but they have never been

(Concluded on Page 2, Column 4)

R. E. Imhoff, sales manager, merchandising division, Westinghouse Electric & Mfg. Co., is another executive who has suggested a cooperative promotion plan on electric kitchens. (See page 11.)

Wisconsin Dealers Fight Move to License Them

MILWAUKEE—Wisconsin Radio, Refrigeration & Appliance Association of this city is leading the fight against the refrigeration inspection and licensing bill now pending before the Wisconsin Legislature.

The bill would ban odorless refrigerants, put a fee on multiple installations and large-sized single-unit domestic installations, and inaugurate a licensing system whereby dealers could operate only after getting a permit from the Wisconsin Industrial Commission.

"This bill was sponsored and introduced at the present session of the Legislature by an organization known as the National Coroners' Association, which has its headquarters in Milwaukee with Peter Zisch as executive secretary," relates H. L. Ashworth, executive secretary of the local association.

"This information was divulged when the bill came up for its first hearing before a committee of the legislature. The Coroners' Association was not represented, but the member of the state assembly who introduced it appeared and stated that he had put the bill in at the request of the coroners' organization.

"No good reason was offered as to why the coroners of the United States should desire such legislation, or why

(Concluded on Page 4, Column 1)

Jersey Central Power Co. Campaign Featuring Meters Nets 1,726 Sales

NEWARK—A two-months retail sales drive from April 1 to May 31, centering around the coin-meter plan, conducted by the Jersey Central Power & Light Co. (Frigidaire dealer for Monmouth, Ocean, Morris, and Passaic counties) resulted in the sale of 1,726 household electric refrigerators, reports C. V. R. Thompson, district representative for Frigidaire Corp.

The campaign, says Mr. Thompson, was an ace example of what can be done with a combination of "modern merchandising methods," old "specialty selling" ideas, and a concentrated activity.

Sales were made through the efforts of two supervisors, 17 branch managers, 31 outside salesmen, two Frigidaire branch representatives, and 17 floor salesgirls.

"Of the 1,726 orders secured, 147 were closed on the floor by the salesgirls. Every one of the salesmen closed an order every other day for 60 days, 14 men closed an order a day for 60 days, and four salesmen closed over 75 orders in 60 days. Two men

(Concluded on Page 2, Column 1)

Sets Record for Ice Cream Cabinets

This new "Kelvin Chest" ice cream cabinet is setting sales records for Kelvinator. Inspecting the 3,000th unit to come off the line are (left to right): H. W. Burritt, vice president in charge of sales; J. A. Harlan, commercial sales manager; and E. R. Legg, manager of national sales.

'An Industry, Like an Individual, Must Have Character, Stamina, And Principles'

THE JOHN CRERAR JUN 14 1935 LIBRARY

By Thomas Evans
Chairman, Refrigeration Division,
National Electrical Manufacturers Association

Philadelphia, June 7, 1935

As the head of the Refrigeration Division of Nema, including the producers of 85 to 90 per cent of electric refrigeration commercial equipment of less than one horsepower capacity, and of household refrigeration produced in the world today; and in view of the elimination of the codes of fair competition under the NRA by the recent decision of the Supreme Court of the U. S., I have been giving a great amount of study and consideration to the present and future relations of the producers in this field, and the outlook for the industry in the years to come. I am inclined by your recent request for an expression on the adjustments necessary by the disappearance of the NRA set-up to state my views at a little more length, in the hope that it may be some contribution in the march of the industry toward greater stabilization and security, as constructive objectives in the years to come.

Electric refrigeration is really the baby in large American industry, being considerably younger in point of years of age than aviation. This lusty infant is really under 10 years of age, and yet up to 1935 it had placed no less than 7½ millions of refrigerators in American homes alone, comprising about 28 per cent of the wired houses of the U. S., the peak year of constant progress being 1934, when 1,300,000 electric refrigerators were produced and put into use. This march of progress has been characterized by constant improvement in design, reliability, and efficiency, while accompanied by a constant drop in unit cost to the consumer. Growth in the use of electric refrigeration for commercial purposes, including air conditioning, has been steady but less marked than in household application. In air-conditioning application, holding in store what many consider the greatest future for the industry, the field is practically untouched in the home, in business, and in the hospital. It is estimated that outside of railroad air-conditioned equipment there are less than 4,000 air-conditioning equipments installed in the U. S. Altogether it may be assumed that the American people have absorbed close to 2 billions of dollars of electric refrigeration.

The industry has operated under code regulation virtually for two years last past. It declined to avail itself of the dubious benefits of price-control; its wage and hour labor conditions were standardized under the broad conditions of the basic Nema code, the rates, I might say in passing, being liberally exceeded over the minimums prescribed. The supplementary code for the industry provided rules of fair competition which were generally observed in spirit and letter, with one or two exceptions.

I believe that the recognition by all our member companies of the benefits of harmonious cooperation in respect to fair play and fair trade has convinced the producers of the wisdom of continuance to live together in strict compliance with such standards. We have not found it necessary to enforce compliance in the past, and believe that the rules of fair competition will govern by mutual consent future relations. By the steady pursuit of such policy and practice the steel and motor car industries notably have achieved great success, stability, and public confidence.

The resolution of the NRA from a regulating and enforcing agency into a fact-finding organization as is now proposed constitutes a fair and satisfactory present solution, as a stopping point where we can look back and analyze the results. It gives an opportunity to grasp and consolidate the gains that have been made, to eliminate those things which have not been beneficial, and to adopt those which have. We will see with a much clearer view in the months to come how far it is desirable to freeze prices and wages at certain levels in order to maintain the high standards of American living. Other agencies of the government may prove more adaptable in maintaining the level of living than direct regulation of wages and hours.

I cannot see, therefore, that the electric refrigeration industry should be adversely affected by the disappearance of code regulation. On the other hand, possibly the industry can benefit

(Concluded on Page 2, Column 2)

Dry Goods Men Urged to Keep Voluntary Code

Officials Suggest Stores Maintain Wage & Hour Levels

By T. T. Quinn

CHICAGO, June 11—(Special Wire to ELECTRIC REFRIGERATION NEWS)—Passing of NRA offers business a challenge to solve its own problems, David Ovens, general manager of J. B. Ivey & Co. and president of National Retail Dry Goods Association, told members of the association at the opening session of its convention in the Stevens Hotel Monday.

More than 2,000 retailers and store executives had registered for mid-year meeting at close of first day. By Thursday, when sessions close, it is expected that 5,000 will be present.

Channing E. Switzer, managing director of the association, said employers have an obligation to their workers to maintain present wage scales and not to alter materially hours of work.

Irving C. Fox, Washington counsel on NRA codes, warned retailers to resist attempts of manufacturers to take unfair advantage of them in the uncertain period arising from the abolishment of NRA.

"The passing of the NRA has put you gentlemen back on your own," Mr. Ovens told the merchants. "You have been given all the cards in the

(Concluded on Page 5, Column 1)

1,914 Units Sold by Georgia Power

ATLANTA—Household electric refrigerators added to the Georgia Power Co. lines during the first four months of 1935 totalled 1,914 units as compared with 869 units during the same period of last year, an increase of 120 per cent.

Other appliances which showed increases in unit sales are as follows: ranges, 33 per cent; water heaters, 76 per cent; percolators, 407 per cent; portable lamps, 37 per cent; irons, 47 per cent; vacuum cleaners, 195 per cent; waffle irons, 76 per cent; Mazda lamps, 20 per cent.

The only appliance which did not show an increase were electric washers and ironers and water pumps.

4-Year's Service for $5 Is Offered by Grunow

CHICAGO—A four-year service extension contract, guaranteeing the user against replacement cost on the Grunow sealed unit, is now being offered for an additional charge of $5 to the retail price by General Household Utilities Co., manufacturer of the Grunow household electric refrigerator.

The unit carries a standard 1-year warranty, the service contract being in addition to this warranty.

Harry Sparks Becomes Manager of Sparton

JACKSON, Mich.—A revised plan of management, under which William Sparks turned over his routine duties as general manager of Sparks-Withington Co. to his son, Harry G. Sparks, was announced last week by Winthrop Withington, chairman of the board.

The change, which became effective June 3, was made at the request of Mr. Sparks, who had asked to be relieved of the many duties as active general manager which for years had occupied most of his time. He will continue in his capacity as president of the company.

Harry G. Sparks has been with the Sparks-Withington Co. for the past 15 years, and during the last five years has been active in design, sales, and administrative work.

The 1935-36 line of Sparton radios will be unveiled at a distributors' convention here sometime this month, Mr. Sparks said. Refrigeration business, he added, was about 40 per cent ahead of the same period last year.

SPECIFICATIONS OF 281 HOUSEHOLD REFRIGERATORS IN THIS ISSUE

Meter Drive Nets 1,726 Sales

(*Concluded from Page 1, Column 2*)

sold over 80 jobs in 60 days. George Goodal and William Eger were high men with 86 and 85 sales respectively," said Mr. Thompson.

Each salesman made his quota of $5,000 worth of business.

B. A. Seiple, commercial manager of the power company, was general chairman of the campaign. He was assisted by his supervisors, S. R. Butcher and Robert Matthews, who cooperated with the men in the field. C. W. Kirby, Newark district manager for the Frigidaire branch, also cooperated with Mr. Seiple. Closing help was furnished by Mr. Thompson and R. McPherson, Frigidaire special representative for the campaign.

Advertisements, featuring the activity, were placed in the leading paper of each town involved in the campaign. Window displays told the story of the meter. Direct mail advertising, enclosing return cards, was sent to a selected list of prospects.

However, says Mr. Thompson, the most effective promotion was carried on through the power company employees. Meetings were held in every branch and the office employees, collectors, meter readers, linemen—in fact the whole personnel, were acquainted with a "tip" system.

With all these people involved in the campaign, the story soon reached every possible prospect, and final returns showed that more than 170 per cent of quota was made during the drive.

A checkup on the sources of the sales showed them to be about equally divided between tips, leads from users, and canvassing. Floor activity was greater than at any time in the company's history, relates Mr. Thompson.

Evans Suggests 'It Gains Strength As It Goes' As Industry Motto

(*Concluded from Page 1, Column 3*)

considerably in understanding and sympathy between the producers on all mutual problems through contacts occasioned by the necessity of joining in codification, and these benefits should be retained. Markets for electric refrigeration stretch far and green before the eyes—there is a great harvest to ripen in the future. Vast needs in the past have been supplied, without due reward, by other industries which have not had the good sense, clear vision, or self-control necessary to reap the recompense to which they are entitled. This industry can be made to prosper by progressively lowering costs with improved design and efficiency and with fair and reasonable profits in fair and open competition.

An industry, like an individual, must have character, stamina, and principles. It is the composite of what its leaders make it. As this great industry grows older it must grow in strength and character. One could not have such personal interest in what I might call the personal character of the industry where it not in contemplation of the vital importance of this particular product to American life.

Let us envision the American home, hospital, shop, office, and factory of the future—with food and air temperature and humidity regulated through mechanical refrigeration to add inestimably to the pleasure, efficiency, health, happiness, and long life of our people, at a cost making it available to all classes and a necessity to the high standard of American living.

Peter the Great adopted a motto for his country emerging from semi-barbarism: "VIRES ACQUIRIT EUNDO," which being interpreted means "IT GAINS STRENGTH AS IT GOES." I suggest this for our industry.

Zimmerman Urges Utilities to Form Bureau for Electric Kitchens

(*Concluded from Page 1, Column 1*)

installed because we have continued to sell individual appliances with no real regard for their relation to one another.

"The low-income families which make up 40 per cent of our customers," he averred, "cannot be sold a complete electric service, but will take that portion of it which includes electric refrigeration if it is offered through an appliance that has low price, economical operation, and long life.

"The better income market, representing 60 per cent of our customers," he continued, "is now receptive to a more complete home service. It is an ideal new market."

Mr. Zimmerman pointed out that the complete and coordinated electric kitchen cuts the hours of kitchen labor in half. It is more sanitary, produces food that tastes better, its uncontaminated air makes a more healthful work room, and it is safe. It protects food in its refrigerator, he continued, saves food shrinkage in the range, and reduces dish breakage in its dishwasher.

"It costs as little as a cheap car," he argued. "It can be operated for $2 a week. In current consumption from our lines it is equal to eight average customers. And it is within the means of at least 25 per cent of our patrons.

"Automobiles," he declared, "are largely sold on body styling. Think how that market would be limited if the auto people sold chassis and let the customer go elsewhere to buy a body."

Mr. Zimmerman suggested that the Edison Electric Institute set up an electric kitchen bureau, managed by a chief executive and staffed with several men to take the story to the local clubs and leagues, cooperating with them and with unemployed architects.

Frank McLaughlin, Seattle, president of the Puget Sound Power & Light Co., proposed a huge good will campaign, in his talk before the convention members.

"We are sure of a place in the sun," he warned, "only on the merits of our performance in discharging a public trust. If we fail in this somebody else will take our place. No business can survive where customers patronize it only because they have to.

"The siren song of the advocate of public power is that the day of private operation is over, and only with public ownership can cheap rates be obtained and the rights of the people protected.

"We face the most difficult and gigantic task that ever faced a great industry," he continued. "We have not time for mud slinging or whimpering. We have to regain a somewhat lost and somewhat stolen public confidence, after the shortcomings of a few of us have caused the industry to be convicted without a fair trial.

"You can't build good will by selling an inferior product or charging too high a price for a good one. We must reform where necessary, discontinue any abuses, go to the people with clean hands and the thought of public service uppermost, and then undertake an extensive campaign of enlightenment through every available means—newspapers, radio, personal appearances, and any other effective medium."

The real problem now, according to Mr. McLaughlin, is to provide the home with electric equipment.

"The auto industry has done a marvelous job of selling; we must outdo it. Instead of the slogan 'a chicken in every pot,' make it a 'range, refrigerator, and water heater in every home.'

"Then it will be possible to reduce rates much farther with a profit. And with all the talk about cheap power from governmental projects rates are going to have to continue to come down if the good will of the customer is to be obtained and held."

J. C. Guild, Jr., president of the Tennessee Electric Power Co., Chattanooga, told members of the convention how his company met the competition of the TVA and the EH&FA.

"In June, 1933, our state utilities commission ordered a reduced statewide uniform residential rate which amounted to a 10 per cent cut in our residential revenue. Our business had already decreased. We had already cut down merchandising."

Mr. Guild stated company officials decided the only thing to do was to conduct a strenuous sales campaign. All employees were taken into the company's confidence on the situation. A system of commissions and bonuses was instituted. The idea was to build up load—sell more current.

One of the company's engineers, said Mr. Guild, advanced the idea of selling a standard make electric iron for $1.95 that formerly sold at $4. Iron sales jumped from 4,000 to 20,000 a year and power consumption also went up.

"In May, 1934, the EH&FA announced their refrigerators, ranges, and water heaters, mostly standard models that we already had been selling, but with lower prices and carrying charges," declared Mr. Guild. "We went right along with them, used the same sort of finance plan, but carried our own paper.

"Today," he concluded, "we have a refrigerator for about every two and a half customers, a range for about every five, and a water heater for every 20. Despite the forced reductions in rates, yearly revenue is only about 3 per cent under a year ago and it now is increasing toward an actual gain."

That use of electric service is more definitely planted in the minds of customers today than ever in the history of the industry is the opinion of G. C. Estill, president and general manager of the Florida Power & Light Co.

"This is largely due to the recent large volume of front-page space being given to uses of electricity," he stated. "This front-page space we could, under no circumstances, have ever bought and paid for. So, for the life of the industry, let's capitalize on this fact."

Front-page and radio propaganda, he said, although sometimes detrimental to electric companies, has tended to change the residential user to thinking of the monthly utility bill as his electric bill, rather than as his lighting bill.

"Therefore," he concluded, "we can best save our companies from government ownership by taking full and complete advantage of this situation in putting forth more high class sales effort now than what was formerly considered good utility practice."

American Blower Opens Air-Conditioning Display

DETROIT—Members of the executive committee of the American Radiator and Standard Sanitary Corp. of New York were in Detroit last week to officially open a comprehensive factory display of all the air-conditioning products offered by the American Blower Corp., Detroit subsidiary.

The display was established for architects, consulting engineers, and the contracting trade, who might want to see all of American Radiator's equipment at one time.

Among the visiting executives were Roland J. Hamilton, president of the American Radiator Co. and vice president of the American Radiator and Standard Sanitary Corp.; Henry M. Reed, president of the Standard Sanitary and Mfg. Co., Pittsburgh; Chas. W. Hodges, chairman of the board of the Detroit Lubricator Co.; James Inglis, chairman of the board of the American Blower Corp.; and Clark T. Morse, president of American Blower.

A Sound Product *plus* a Finance Service which enjoys the public's confidence ...if you have a combination of these two, you have a sales weapon of proven power and efficiency.

CALL TODAY
OUR NEAREST LOCAL OFFICE

Abilene – Akron – Albany – Altoona – Amarillo
Asheville – Atlanta – Augusta – Bakersfield
Baltimore–Bangor–Bay Shore–Beaumont–Beckley
Binghamton – Birmingham – Boise – Boston
Bridgeport – Bronx – Brooklyn – Buffalo – Butte
Camden – Cape Girardeau – Cedar Rapids
Charleston – Charlotte – Chattanooga – Chicago
Cincinnati – Clarksburg – Cleveland – Columbia
Columbus–Cumberland–Dallas–Dayton–Denver
Des Moines – Detroit – El Paso – Erie – Florence
Fort Wayne – Fort Worth – Fresno – Glens Falls
Greensboro–Greenville–Hagerstown–Harrisburg
Hartford – Hempstead – Hickory – Houston
Huntington, W. Va. – Indianapolis – Jacksonville
Jamaica – Jamestown – Jersey City – Johnson City
Kansas City – Knoxville – Lexington – Lincoln
Little Rock – Los Angeles – Louisville – Manchester
Memphis – Miami – Milwaukee – Minneapolis
Mobile – Montgomery – Montpelier – Mt. Vernon
Nashville – Newark – Newburgh – New Haven
New Orleans – New York – Norfolk – Oklahoma
City – Omaha – Orlando – Paducah – Paterson
Peoria – Perth Amboy – Philadelphia – Pittsburgh
Pittsfield – Portland, Me. – Portland, Ore.
Portsmouth – Poughkeepsie – Providence – Raleigh
Reading – Reno – Richmond – Roanoke – Rochester
Rome, Ga. – Sacramento – St. George – St. Louis
Salt Lake City – San Antonio – San Diego
San Francisco – San Jose – Scranton – Seattle
Shreveport – Spartanburg – Spokane – Springfield
Mass. – Springfield, Ohio – Stockton – Syracuse
Tampa–Toledo–Tucson–Tulsa–Utica–Washington
Watertown – Wheeling – White Plains – Wichita
Wilkes-Barre – Wilson – Yakima – Youngstown

Millions of people have had firsthand experience with C. I. T. in the course of its 27 years of financing. They readily accept C. I. T. terms as standard.

Why not use this confidence to help build your own sales. Feature the C. I. T. Plan as the convenient way to buy, without having to draw heavily on cash.

Likewise you yourself may entrust all credit details and collections to C. I. T. Financing Service with confidence they are in safe hands.

Every task is carried through on the ground by well-trained men in our Local Offices. C. I. T. Plans cover approved types of mechanical refrigerators and water coolers, as well as electric ranges and air-conditioning equipment. Phone our nearest office for a C. I. T. fieldman. Have him explain what C. I. T. Service can do for you.

C.I.T. CORPORATION
NEW YORK — CHICAGO — SAN FRANCISCO
Completely Functioning Local Finance Offices in the Principal Cities

A Unit of COMMERCIAL INVESTMENT TRUST CORPORATION—CAPITAL AND SURPLUS OVER $75,000,000

M&E EST. 1866
COMMERCIAL DOMESTIC and BARE COMPRESSORS
1/6 to 10 H. P.
MERCHANT & EVANS CO.
MANUFACTURERS
..PHILADELPHIA..
EST. 1866 Plant: LANCASTER PA.

KRAMER
UNIT COOLERS
Manifolded for FREON

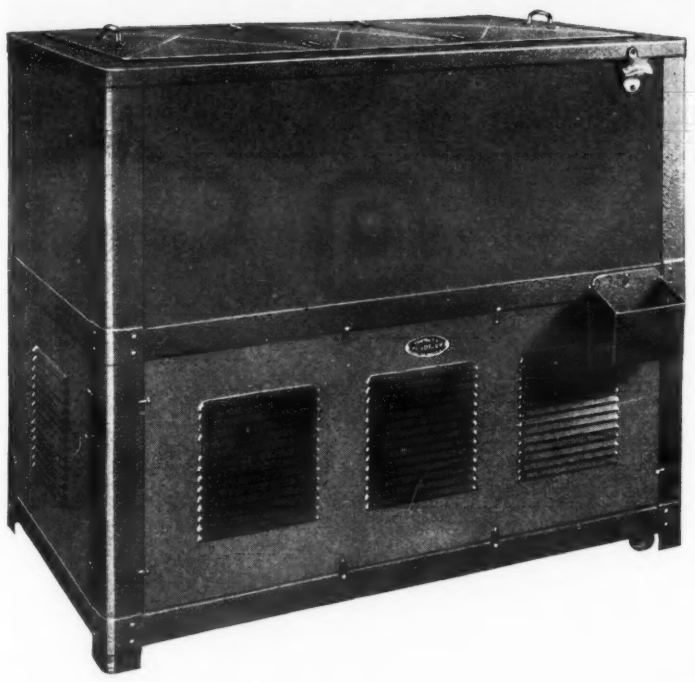
Designed with maximum Fin Coil Surface and minimum air flow (CFM) per square foot of surface to permit operation at high evaporator temperature for minimum dehydration effect, and maximum capacity for Condensing Unit.

Units especially designed for FREON are manifolded and provided with drier coil.

Send for Literature - Description - Prices
TRENTON AUTO RADIATOR WORKS
Main Offices and Factory, TRENTON, NEW JERSEY
NEW YORK: 210-212 West 65th Street PITTSBURGH: 5114 Liberty Avenue

You can't argue with SALES RECORDS!

The New CROSLEY KOLDRINK
ELECTRIC BOTTLE COOLER



Only . . .

$99.50

DELIVERED . . . INSTALLED . . .
ONE YEAR FREE SERVICE

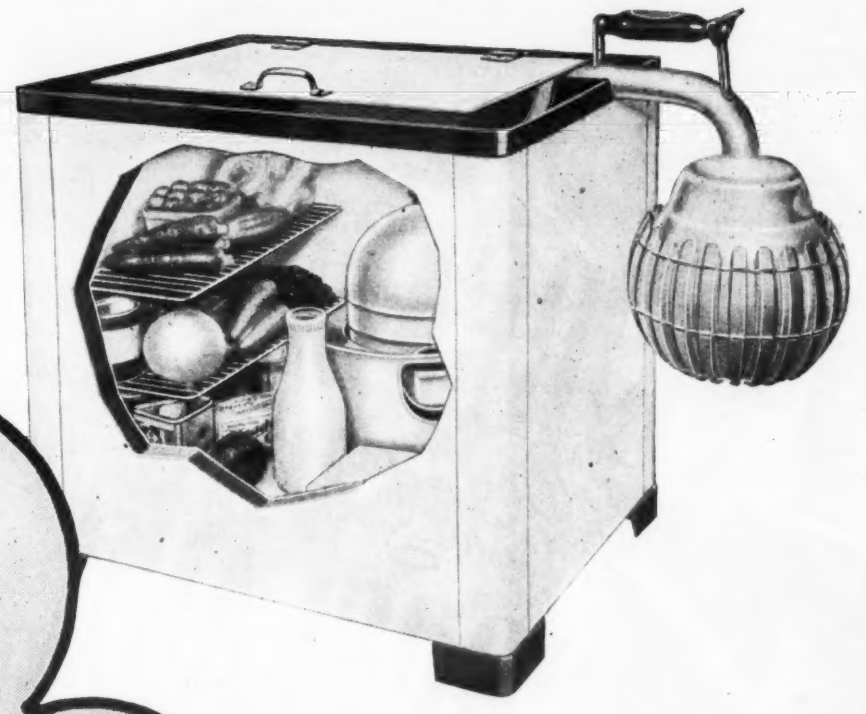
A necessity for restaurants, druggists, hotels, roadside stands, summer camps, groceries—any retailer of bottled beverages. Cuts cost of refrigeration as much as one-half; increases sales by winning popular approval of the drinks. Of particular value to the small dairyman. What a market! No wonder sales are going up and up! No wonder dealers are profiting.

The New CROSLEY ICYBALL
FOR UNWIRED HOMES

Only . . .

$59.95

F. O. B. FACTORY
Price includes cabinet, stove, Icyball unit, stabilizer and tub.



Wherever refrigeration is needed and electricity is not available. For rural homes, dairies, summer camps, roadside stands, boats. Turns heat to ice. Uses only about 2c worth of kerosene a day. Not one moving part. Makes ice cubes. A dependable refrigerator —low in price, economical to use. Gives the Crosley dealer a wide, non-competitive market.

3 AMAZING ~~CROSLEY~~ MONEY MAKERS in refrigeration that have piled sales record upon sales record..Meet every condition..give you a 3-fold market (A) THE WIRED HOME, (B) THE UNWIRED HOME, (C) ROADSIDE STANDS, ETC.

For the wired home, the Crosley Tri-Shelvador, the Shelvador, the Table Shelvador . . . 3 types of electric refrigerators for every purse and purpose, featuring the sensational Shelvador that means—more room; things twice as easy to find; offering a value unheard-of in electric refrigeration.

For unwired homes, summer camps, etc., the new Crosley Icyball . . . turns heat into ice . . . gives all the food protection that any refrigerator can give for 2c worth of kerosene daily. Also a bottle cooler . . .

For roadside stands, confectioneries, restaurants, hotels, etc., the Koldrink Electric Bottle Cooler.

Thus does Crosley cover all 3 markets. Thus Crosley gives to dealers a 3-fold sales lead. The rest is written in sales records that seem almost unbelievable. From 100% to 1000% greater sales during 1935 than during corresponding months last year. Can you afford *not* to get in on this?

ALL SALES RECORDS SMASHED BY CROSLEY SHELVADOR MODELS
. . . DUE TO NATION-WIDE PUBLIC PREFERENCE!

$79.50 UP

TRI-SHELVADOR

TABLE SHELVADOR

SHELVADOR

TABLE SHELVADOR . . . 2 models priced from $79.50 to $94.50. Uses semi-hermetic rotary compressor. Ideal for small homes, summer camps and cottages.

SHELVADOR . . . 5 models from $99.50 for 3.5 cu. ft. size to $169.50 for 7.08 cu. ft. size.

TRI-SHELVADOR . . . 3 models from $139.50 for 4.3 cu. ft. size to $189.50 for 7.08 cu. ft. size.

Both Shelvador and Tri-Shelvador models have — interior light, flat bar shelves, ventilated front, porcelain interior, lacquer exterior. (Most models available with porcelain exterior at slight extra cost.)

Tri-Shelvador models have, in addition, the Shelvador, Shelvatray, Storabin, and self-closing ice-tray chamber door.

CROSLEY SHELVADOR MODELS HAVE SHOWN THE GREATEST SALES INCREASE IN THE HISTORY OF ELECTRIC REFRIGERATION

PRICES INCLUDE DELIVERY . . . INSTALLATION . . . ONE YEAR FREE SERVICE

Prices in Florida, Texas, Rocky Mountain states and west, slightly higher.

THE CROSLEY RADIO CORPORATION - - - CINCINNATI

POWEL CROSLEY, Jr., *President* (*Pioneer Manufacturers of Radio Receiving Sets*) Home of WLW—the world's most powerful broadcasting station

Wisconsin Dealers Fight Proposed Law Requiring Operating License

(*Concluded from Page 1, Column 2*)

it should be started in the state of Wisconsin.

"The author of the bill knew nothing at all about its provisions or the intended purpose of the bill and the original hearing developed into a sort of comedy, so much so that members of the committee rather strongly indicated that the bill probably would be pigeon-holed and would never be reported out for action.

"The refrigeration industry in Wisconsin was represented at the hearing by more than 60 people, including both wholesale and retail interests from all sections of the state.

"At the conclusion of the first hearing, the chairman of the committee stated that a further hearing might be held at a later date, but this has not developed and officials of our organization are of the opinion that the bill is a dead issue."

Text of the proposed legislative measure is as follows:

A bill to create section 146.23 of the statutes, relating to the use of gases as refrigerants in domestic refrigeration systems, and providing a penalty.

SECTION 1. A new section is added to the statutes to read: 146.23 REGULATION OF DOMESTIC REFRIGERATION SYSTEMS; PENALTIES. (1) DEFINITIONS. For the purpose of this section, the following words shall mean:

(a) "Refrigerator," a space enclosed by an insulating medium which is used for the preservation of food or other perishable substances by means of refrigeration as herein defined.

(b) "Refrigeration," the process of extracting heat from a refrigerator by means of a refrigerating system.

(c) "Refrigerating system," an apparatus or a combination of apparatus essentially comprising a pressure imposing element and one or more evaporators in which a refrigerant is used for the purpose of producing refrigeration.

(d) "Refrigerant," a substance used to produce refrigeration by expansion or vaporization when contained in a refrigerating system.

(e) "Odorous refrigerant," a refrigerant which when present in air at a lower concentration than that known to be detrimental to health is readily detectable by its odor or irritating characteristics.

(f) "Odorless refrigerant," a refrigerant which has no odor or irritating characteristics rendering it easily detectable when present in air at a lower concentration than that known to be detrimental to health.

(g) "Domestic system," a refrigerating system installed or operated or both in a building, any part of which is used for residential purposes; domestic systems are further classified as follows:

1. "Class A" or "Multiple system," a domestic system in which two or more evaporators in more than one refrigerator are connected to one pressure imposing element.

2. "Class B" or "unit system," a domestic system in which one evaporator is, or not more than two evaporators in one refrigerator are, connected to one pressure imposing element whether the pressure imposing element is installed integrally with a refrigerator or at a distance therefrom.

(h) "Commission," the industrial commission of Wisconsin.

(i) "Evaporator," the element of a refrigerating system in which a refrigerant is expanded or vaporized to produce refrigeration.

(2) ODORLESS REFRIGERANTS PROHIBITED. (a) It shall be unlawful for any person, firm, or corporation to install or cause to be installed or to maintain or operate within the state contrary to the provisions of this section, any domestic system as herein defined which contains or uses, for the purpose of refrigeration, any odorless refrigerant in excess of 5 lbs. avoirdupois weight.

(b) An odorless refrigerant may be used if made odorous by the addition thereto or in combination therewith of a substance, permanent in its effect, which will make such odorless refrigerant odorous as defined in subsection (1) hereof and as approved by the commission.

(3) INSTALLED SYSTEMS AFFECTED. The refrigerant in all domestic systems installed prior to the effective date of this section which contain or use, for the purpose of refrigeration, more than 5 lbs. of odorless refrigerant, shall be made to comply with the requirements of this section within 30 days from such effective date.

(4) INSTALLER TO BE LICENSED. It shall be unlawful to install:

(a) Any "class A" domestic system irrespective of the amount of refrigerant contained or used therein; or

(b) Any "class B" domestic system containing or using more than 20 lbs. of any refrigerant without first having obtained a permit therefor from the commission and the payment of fees as follows: for every "class A" system 50 cents for each evaporator installed, except that the fee for such permit shall not be less than $3.00 nor more than $35.00; and for every "class B" system, a fee of $3.00 for each installation.

(5) COMMISSION MAY APPROVE SYSTEMS (a) It shall be unlawful for any manufacturer, or manufacturer's agent, or general distributor, either directly or indirectly, to sell, offer for sale, or to install within the state any domestic system containing or using 20 lbs. or less of any refrigerant without first having obtained the approval of the commission of such systems and their component parts.

(b) For the purpose of obtaining such approval, manufacturers, manufacturer's agents, or general distributors shall submit to the commission such data and information as may be required by it concerning all refrigerating apparatus they manufacture, distribute, use or intend to use in the installation of domestic systems as herein defined.

(c) Upon the approval of "class B" domestic systems, the commission shall issue the manufacturer, or manufacturer's agent, or general distributor a general permit for the sale or installation or both of approved "class B" systems, which general permit shall expire one year from the date of issue. For each general permit so issued, and for each renewal thereof, the manufacturer, or manufacturer's agent, or general distributor to whom it is issued shall pay a fee of $100.00.

(d) Subject to the approval and general permit issued to any manufacturer, manufacturer's agent or general distributor, the commission shall further issue to any dealer, distributor or other person who desires to sell, offer for sale or to install approved "class B" domestic systems containing or using 20 lbs. or less of any refrigerant a general permit so to do. Such permits shall expire coincidentally with the permits issued to the manufacturers, or manufacturer's agents, or general distributors of such approved systems and may be renewed in a similar manner. For each permit so issued a fee of $10.00 shall be paid by applicant.

(e) In order that the commission may at all times have a complete record of all domestic systems sold or installed in accordance with the conditions of this section, each dealer or distributor of such systems shall file with the commission a current list or schedule of all refrigerating apparatus they severally use or intend to use in the installation of domestic systems as herein defined. Such list or schedule shall contain the following information and such other information as may be required by the commission: type designation, model, cubical capacity, total weight of refrigerant and kind of refrigerant used in all pressure imposing elements, evaporators and tubing which form the component parts of completed "class A" and "class B" systems.

(f) The manufacturer, distributor, dealer or other person installing any approved "class B" domestic system using more than 10 lbs. and less than 20 lbs. of any refrigerant shall notify the commission within 48 hours after the completion of such installation, giving the name of the purchaser and exact address at which installation has been made.

(g) All orders, rules, and regulations imposed by the commission shall be governed by the provisions of chapter 101 where applicable.

(6) PENALTIES. Any person, firm, or corporation or their servants or agents who shall violate any of the provisions of this section shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than $100.00 nor more than $1,000.00 or by imprisonment in the county jail not less than 30 days or more than one year, or by both such fine and imprisonment.

BOOKS

'The National Recovery Administration'

Authors: Leverett S. Lyon, Paul T. Homan, George Terborgh, Lewis L. Lorwin, Charles Dearing, and Leon C. Marshall. Publisher: The Brookings Institution, Washington, D. C. Pages: 947. Price: 03.50. Date of Publication: April, 1935.

WITH echoes of the Supreme Court's decision that the NRA is unconstitutional resounding through the nation, this book, "The National Recovery Administration," gives the layman a comprehensive and objective analysis of the plan, organization, and operation of the NRA.

At the moment—when the air is filled with talk about "salvaging the purposes" of the NRA—this book becomes particularly valuable and interesting, as a guide to further thinking along these lines. It will also prove helpful as a background for study of the Supreme Court's masterly opinion on the NRA case.

Compiled by a group of experts from the Brookings Institution, Washington, D. C. (an organization nationally known and respected for its unbiased reports on government and economics), the facts set up in this book, are the results of a close study of this administrative experiment from its inception through the periods of its development. Purpose of the book is to gauge significance of the NRA, to determine its economic effects.

Prefacing the detailed analysis of each phase of the structure and the work of the NRA, the authors have briefly sketched the underlying law out of which the Recovery Act grew, and the provisions and objectives upon which it is based.

The book describes the administrative organization and procedure of the NRA; it guides the reader through steps of the code making process; states the wages and hours regulations provided in the code law; portrays the factors introduced into industrial relations by the NRA, and explains the NRA's effect upon the development of craft and company unions.

An analysis of the trade practice rules, that covers the problems existing previous to the instigation of the Recovery Act, the NRA's attempt to settle the problems, and the resulting altered regulations, are clearly elucidated in the book's pages.

Extremely pertinent at this time is the book's discussion of the NRA as a recovery measure. The authors have set up the NRA's Purchasing Power Theory (i.e.: that employers were to raise wages without increasing prices) and, in subsequent chapters have shown how this theory was used or abused in different industries.

Reviewing various weak points in the NRA, the authors state:

"A great variety of factors have conspired to make code administration unsatisfactory. The characteristics of many trades and industries are antipathetic to the types of control attempted. Policing is ill financed. Factional disputes are common. Many code provisions are non-administrable.

"The multiplicity, vagueness, and multiformity of the rules make it impossible to apply them reasonably to the situations to which they are made legally applicable."

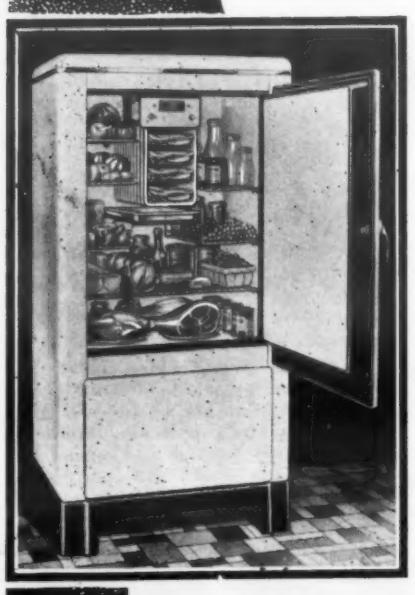
Because several of the authors who collaborated on this book were for various periods integral parts of the NRA organization, no more timely or authoritative source of information on the Recovery Act can be obtained.

Perusal of this book will give you a more clear perception of those factors which have influenced, affected, and altered the original objectives of the NRA conception to such an extent that it has been found unworkable as an established national economic system.

10 REASONS Why Dealers Everywhere are Swinging to COPELAND

SELLING ADVANTAGES THAT COPELAND OFFERS YOU:

- 1. Superior Design and Engineering.
- 2. Maintained Quality in Every Manufacturing Detail.
- 3. Highest Efficiency—Lowest Operating Cost.
- 4. Built to Stand Up for Years.
- 5. Engineered to Eliminate Service Complaints.
- 6. An Imposing Record for Long Time Performance.
- 7. Obvious VALUE—Sells Easily—Stays Sold.
- 8. Small Line—Fast Movers—Rapid Turnover.
- 9. Generous Profits that STAY in Your Pocket.
- 10. A Progressive Line You Will Like Better Each New Month.



DEALERS from coast to coast are now turning to COPELAND as the dependable line to sell. With Copeland you can offer your customers a product of acknowledged quality, with an envious background as a pioneer in electrical refrigeration. Copeland engineering and manufacturing standards keep faith with both dealer and his customers, because Copeland is built to serve economically and serve for many years to come. You can do a big business—a safe business—a profitable business with Copeland selling advantages. There never was a better time to consider Copeland than right now! Write at once!

COPELAND REFRIGERATION CORPORATION

Manufacturers of a Complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

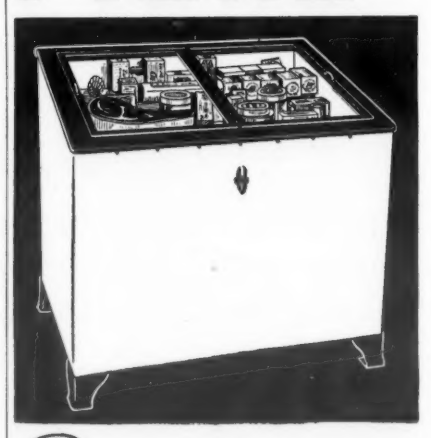
Copeland DEPENDABLE Electric REFRIGERATION

McCORD Refrigeration PRODUCTS

COMMERCIAL EVAPORATORS
DOMESTIC EVAPORATORS
CONDENSERS
METLFLEX ICE TRAYS
SPIRAL FINNED TUBING
SPIRAL COPPER FINNED IRON, STEEL OR COPPER PIPE

McCORD RADIATOR & MFG. CO., DETROIT

IT'S HERE! LIST $250.00 F.O.B.



Sanitary ELECTRIC REFRIGERATED

DISPLAY COUNTER
MODEL NO. 519

10.7 sq. ft. shelf area, 7.5 cu. ft. capacity, Double Glass Chrome Trimmed Top, Heavy-Duty Two-Cylinder Unit, Easily Movable—Moves on Ball Bearing Casters.

This attractive light-duty display counter combines maximum display and storage at such low cost. Ideally adapted for displaying and preserving foods. The Sanitary builds up business and profits for you and the retail provisioner.

Write for Liberal Discounts

Sanitary ELECTRIC CORPORATION
Manufacturers
Fond du Lac, Wisconsin, U. S. A.
Chicago Sales Office
14100 MERCHANDISE MART

Dry Goods Men Urged to Retain Provisions of Retail Code

(*Concluded from Page 1, Column 5*)

game—the only question is how are you going to play them?

"When the Supreme Court in its unanimous action the other day took our retail code away from us, it perhaps did not do to us as sorry a service as some of the 'new dealers' would have us believe. It all depends precisely on how much unselfish courage we have to carry on and how much we have learned through our experiences under the NRA. The old code, with its 66 pages of involved writing, its numerous interpretations and amendments, was impossible to administer and enforce."

One of the most valuable lessons of NRA, Mr. Ovens said, was that the payment of a living wage and the granting of a reasonable work week stimulated purchasing power benefited both employees and employers.

Bad features of the codes, he said, were those provisions which prevented the normal, natural, free flow of merchandise from manufacturer to consumer a result unsound and uneconomic and not in the interest of all people.

"It is the part of this convention to lead the way to a merchandising job through which capital, management, and labor will have equal fair play," Mr. Ovens said. "You can't take a lot of involved writing in a code and make it take the place of sound business management and the conscience of men who conduct the industrial affairs of this country.

"For the past year or two, the 'brain-trusters' in Washington have been using their academic gifts, weaving intricate language about a new concept of man's relations to his fellowmen. They have been trying to make platitudinous talk about better distribution of wealth with all its alphabetical set-up to take the place of a simple, direct, understandable government program.

"In this country there is sufficient happiness to go around and there is just as much wealth and the things wealth will buy. It is not the task of government technicians and schoolhouse weavers of fancy phrases to find a way to do it. It is a task for the business leaders and great industrial executives and hard-headed men of affairs not swayed by bed-time stories.

"Mr. Sweitzer denied the charge made last week by the American Federation of Labor that retailers led in restoring longer hours, reducing wages, and laying off workers.

"If there is one division of American business which recognizes the responsibility of maintaining employment and wages, it is the retailer—whose very existence depends upon the purchasing power of the public," he said.

"It is perhaps inevitable that there have been instances where shortsighted retailers adjusted the wages and hours of their employees following the Schechter decision; but it is ill-advised to censure all retailing for the ill-advised action of the few."

The speaker said that moral obligations of employers to employees were ever-present. "You had them before NRA; you will have them as long as you are in business.

"You have an obligation to your employees to maintain present scales of wages and not to alter materially work hour schedules at this time. Some minor modifications in working hours may be justified where rigid code provisions have worked undue hardship on the operating efficiency of some department of your store. But any reduction in wages or any substantial change in working hours can only result in decreased purchasing power and unemployment in the field of retailing—surely an example and a situation which retailers want to shun."

Ever since Supreme Court invalidated NRA, Mr. Fox told merchants, manufacturers, particularly those in needle wear trades, have been accusing retailers of immediately exerting pressure to break down their code structures, to obtain greater and greater concessions on terms and prices to such an extent to jeopardize labor.

"Some of the industries which were wise enough not to attempt any drastic changes in marketing conditions, in their terms, returns, etc., have very little to worry about," Mr. Fox said. "Those, however, which were the most drastic in insisting upon obtaining undue advantage have at the present time plenty to worry about—because undoubtedly the retailers will demand restoration of pre-code conditions within the bounds of fairness and reason."

Manufacturers, Mr. Fox said, would welcome action by retailers which would result in a breakdown of existing wage structures, upping price of merchandise to an extent where labor would suffer, and giving manufacturers ammunition for their appeal for future price regulatory legislation.

"Although the NIRA was declared unconstitutional with regard to the controlling of wage and hour provisions, it has not been declared unconstitutional in other respects—and eventually new national legislation will be made, and probably successfully, to control and regulate marketing practices by manufacturers selling their products in interstate commerce.

"A bill just introduced attempts to give the Federal Trade Commission exactly such powers."

W. J. Donald, managing director of Nema, R. H. Grant, vice president, General Motors Corp., Howard E. Blood, president of Norge Corp., and T. K. Quinn, president of General Electric Co., were speakers at Tuesday night's general sessions.

Mr. Donald discussed "New developments in the electrical industry affecting retailers," Mr. Grant, "Potentialities of the market for electric home furnishings," Mr. Blood, "Developments in home refrigeration," and Mr. Quinn, "The new American style home."

Doubleday-Hill Named A-K Distributor

BALTIMORE—Doubleday-Hill Electric Co. has been appointed distributor in the Baltimore-Washington territory for Atwater Kent refrigerators and radios.

Because the electric company is now distributing another line of refrigerators, it will not assume the Atwater Kent refrigerator distributorship until the end of the present refrigerator season. It will, however, assume the A-K radio distributorship immediately.

W. P. Newman, formerly connected with Montgomery Electric Co., Inc. here and the Louis Buehn Co., Philadelphia, will represent the Baltimore sales division of the Doubleday-Hill organization, with headquarters at Chestertown, Md.

Warren F. Perry is president of the electric company, and Henry W. Wilson heads the Baltimore operations.

Sales Idea of the Week

By V. E. Vining, Manager of Department Store Sales, Westinghouse Electric & Mfg. Co.

There comes a day when—your feet hurt—when the calves of your legs seem tied in knots from standing on the hard floor.

When every likely looking prospect turns out to be "J.L.A." (just lookin' around).

When you wish you were a caddie on a golf course—barefooted with your toes wiggling in the cool grass; or a truck driver who never has to be polite—and uses the seat of his pants for something besides a back-drop to hide his nakedness.

So low—if you were a stork you would look like a duck. When your system craves nothing but nicotine—and you are afraid to leave the floor to steal a smoke for fear you might miss a good one; Damn!

Then—

—In walks a dowager and her husband—real ones.

And if you can unlax and unlimber;

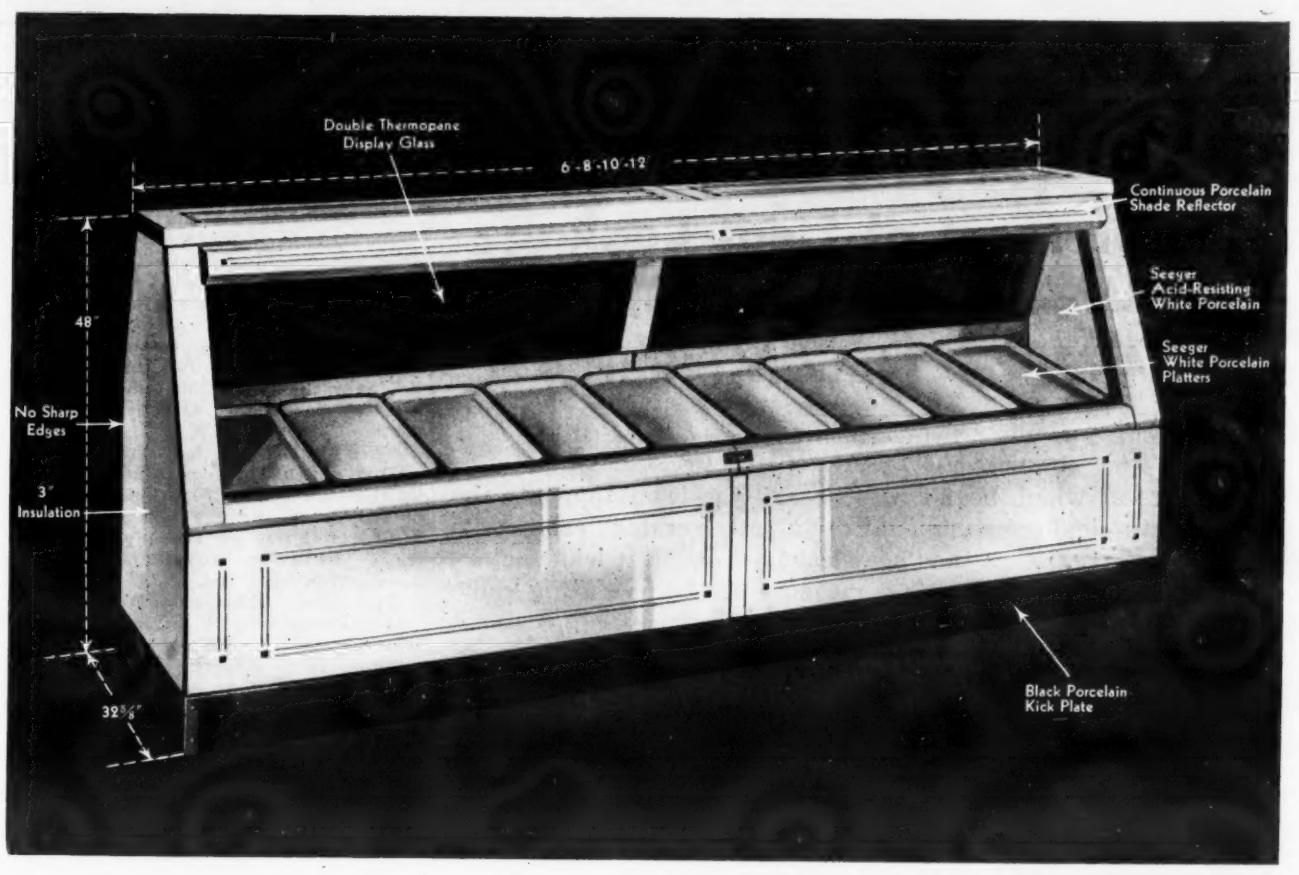
Deploy;

And bring up the big guns;

And do your stuff;

You can tell your wife, Sam says,

"You're a salesman."



SERIES 9

Seeger
SAINT PAUL

Double-Duty Display Case

New Type Finned Coils
Hardwood Service Shelf
No Sharp Edges
3-Inch Insulation
Seeger Black Porcelain Kick Plate
Double Thermopane Display Glass
Seeger White Porcelain—Black Design
Seeger White Porcelain Platters
Seeger Acid-Resisting White Porcelain Interior
Continuous Porcelain Shade Reflector
48-Inches in Height

LOW COST too!

Series 9 Display Case by Seeger fills the need of a LOW PRICED DOUBLE-DUTY DISPLAY CASE—built to Seeger Standards. Modern with large display area—Sturdily built for hard usage—Cost of operation surprisingly low.

Dealers and Distributors of Electrical Refrigeration will find SERIES 9 easy to sell—because it is a wonderful value, and a definite producer of profits.

Write for today's Prices

SEEGER REFRIGERATOR CO.
Saint Paul, Minnesota

New York, N.Y. Boston, Mass. Chicago, Ill. Los Angeles, Calif. San Francisco, Calif.

Special Representatives:
Meyer Smith Co., Buffalo, N.Y. Seeger-Philadelphia, Inc., Philadelphia, Pa.

ENGINEERING

Measurement of Heat Leakage In Westinghouse Cabinets Made by New Method

By Howard D. White, Refrigeration Engineering Department, Westinghouse Electric & Mfg. Co.

THE rate at which heat flows through the insulation into the food storage compartment of a refrigerator cabinet is commonly referred to as the "heat leakage" or "heat leak factor" of the cabinet. This factor is a measure of the insulating value of the cabinet walls, and as such is used in comparing cabinet structures as well as in computing compressor capacities from performance test data. It is usually expressed in B.t.u.'s per hour per degree F. difference between the room temperature and cabinet temperature.

A wide variety of methods have been used for measuring cabinet heat leakage. Some of the more common are the "ice meltage," "brine tank," "ammonia evaporation," and the "electric heater" or reverse method. It is possible to evaluate major differences in cabinet insulating structures by any of these test procedures. However, the test conditions in most cases differ from actual operating conditions with unit and evaporator in place.

In the case of the electric heater method, for instance, which is perhaps the most generally used, the test is conducted with a higher mean insulating temperature than that prevailing when the cabinet is refrigerated. (Unless a special low temperature room is used for the tests.)

This introduces an error, as one of the characteristics of all insulation is that its conductivity, or "K" factor as it is commonly called, increases as the temperature of the insulation is raised. Also, the rate of this increase varies for different kinds of insulation. This means that two cabinets with different types of insulation might appear identical when tested by the electric heater method when actually there was a considerable difference between them under actual operating conditions.

Also, all insulation contains some moisture and with the cabinet refrigerated this moisture is drawn in towards the cold food compartment until a definite moisture gradient is established in the insulation. The quantity of moisture present and its distribution throughout the insulation have a decided effect on the conductivity of the insulation and if we are to obtain a true measure of a cabinet's heat leakage we must not neglect this characteristic.

With the heater method the moisture is driven outward and is redistributed in accordance with the reversed temperature gradient. During this period when the moisture is being redistributed an unstable condition exists and the leakage values obtained are somewhat high. As the test continues the values gradually decrease and after several days they are apt to favor the insulation due to part of the moisture being driven out by the heat.

These conditions not only make it rather difficult to ascertain just which of the values is correct, but also make it necessary for the test to be continued for five or six days in some cases before a constant value of leakage is obtained.

The other schemes mentioned have their shortcomings also and in general are not suitable for accurate or rapid testing. In view of the above and with the demand for greater accuracy and more representative results in order to properly evaluate minor refinements in cabinet design the scheme described below was developed.

Principle of Operation

The scheme consists of refrigerating the cabinet under test by means of a special unit and in measuring the rate at which the unit removes heat from the cabinet. Since this rate is measured for a stabilized condition it also represents the rate at which heat is flowing through the insulation into the cabinet. Or, in other words, it is the heat leakage of the cabinet.

A schematic diagram of the calorimeter system is shown in Fig. 1. In addition to the standard compressor and evaporator, means are provided for regulating and measuring the flow rate of the refrigerant and also for measuring the temperature and pressure of the liquid refrigerant as it enters the cabinet and that of the suction vapor as it leaves.

From these readings of temperature and pressure, we can readily ascertain the heat content of the "entering liquid" and the "leaving vapor" by referring to the A.S.R.E. refrigerant tables. The difference between these heat contents gives us the amount of heat removed from the cabinet per pound of circulating refrigerant. If we multiply this by the rate of refrigerant flow (expressed in pounds per hour) we have the amount of heat removed from the cabinet in one hour.

Now, if we divide this figure by the difference between the room temperature and the average cabinet temperature we have the heat leakage of the cabinet expressed in B.t.u.'s per hour per degree F. temperature difference.

Description of Apparatus

Fig. 2 shows the apparatus as built up in convenient form for use in measuring the leakage of a "bare" cabinet—that is, the cabinet alone minus the effect of the unit. Such a test as this is useful in comparing relatively small differences in cabinet structure as unnecessary variables are removed making far more accurate comparisons. Also, it is indispensable during periods of intensive development when both cabinet and unit structures are subject to change as tests and design work progress.

The compressor, condenser, first receiver tank, throttling valve, etc., are mounted on a standard unit base with the usual suction and liquid lines connected to it. The suction line comes direct from the evaporator assembly in the cabinet. The liquid line, however, runs to the second receiver tank which is mounted on the scale platform and from this tank to the evaporator assembly.

Connections to this second tank are made through several feet of flexible braid covered bellows tubing (marked "8" in Fig. 2) in order to minimize the drag of the tubing on the tank during the weighing process. The Toledo scales used have a 5-lb. scale, readable to ⅛ of an ounce, making possible very accurate weight readings.

The evaporator assembly is mounted on an insulating block which drops into place in the regular unit opening in the cabinet, thus simplifying the setting up of a cabinet for test. Besides the evaporator, pressure gauges, thermostatic expansion valve, and superheating coil the assembly is provided with special thermocouple fittings in the suction and liquid lines.

The thermocouple wires are inserted through insulated sealed terminals in the fittings and the junctions are located in the center of the tubes so that they indicate the temperature of the refrigerant as it enters and leaves the cabinet.

Test Procedure

All tests are conducted in a carefully controlled constant temperature room and we have found it convenient to use a room temperature of 80° F. and an average cabinet temperature of 35° F. as standard test conditions.

The cabinet temperature is taken as the average of five thermocouples (identified as No. 29 in Fig. 2) evenly distributed throughout the food storage compartment.

A "lagged" thermocouple (30) located about a foot in front of the cabinet at latch level is used to indicate the room temperature. The lagging is accomplished by soldering the thermocouple to a small brass weight. This serves to smooth out any ripple in the room temperature thermocouple reading caused by air currents or cycling of the room temperature control and therefore the thermocouple gives a true reading of room temperature.

During the stabilization period it is convenient to connect the thermocouples to a recording potentiometer so that a continuous record is available to serve as a guide for making expansion valve adjustments and also to indicate when a stable condition exists. All temperature measurements used in calculating the heat leakage factor, however, are taken with a Leeds & Northrup precision indicating potentiometer (33).

To set up a cabinet for test, one merely sets the evaporator assembly in place, locates the thermocouples as indicated in the previous paragraph, makes sure that all valves are open, closes the cabinet door, and switches on the unit. No more attention need be paid to it for several hours.

As the cabinet temperature pulls down near the desired value, periodic checks on the temperature are made and the expansion valves adjusted if necessary in order to secure a 35° F. cabinet temperature. The automatic expansion valve serves merely as a throttling valve and by means of it the suction pressure and hence the evaporator and the cabinet temperature are controlled.

The thermostatic valve controls the superheat of the suction vapor and it is held at approximately 40° F.

(*Concluded on Page 7, Column 1*)

Schematic Diagram of Apparatus

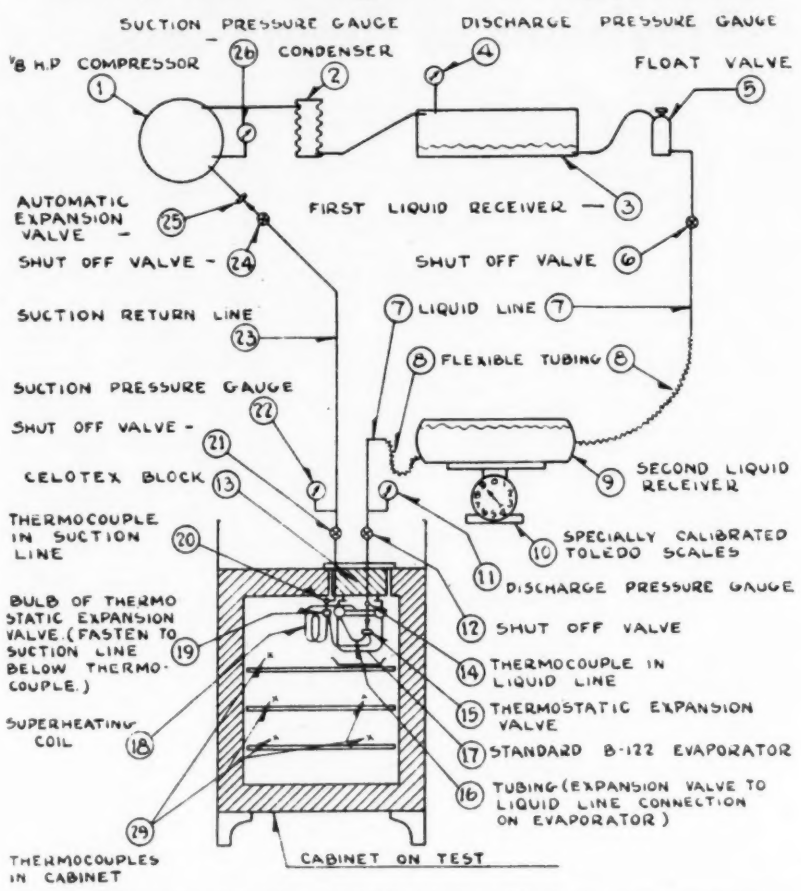
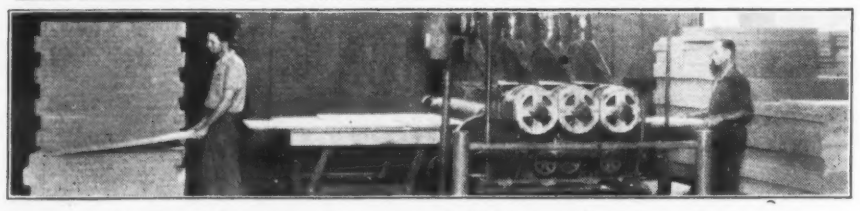


Fig. 1. Schematic diagram of refrigerator cabinet heat leak calorimeter as used in the Westinghouse test described on this page.



Sanding Celotex Boards to required thickness at the Celotex plant.

CABINETS INSULATED WITH CELOTEX

Show Low Operation Cost after Years of Service

For a dozen years Celotex has been demonstrating its high efficiency as an insulating material.

Celotex stands up in service because it has the qualities so peculiarly necessary for refrigerator jobs. There are tens of thousands of Celotex insulated cabinets functioning at low operating cost after years of service.

This complete and continued reliability as an insulating medium makes Celotex an invaluable talking point for the refrigerator salesman. No less important to users is the fact that Celotex is made of cane fibre—waterproofed—resistant to moisture—sterilized—odorless—sanitary; that all Celotex Cane Fibre Products are Dry-Rot and Termite Proofed by the exclusive Ferox Process (patented).

SPECIAL ADVANTAGES FOR CABINET MAKERS

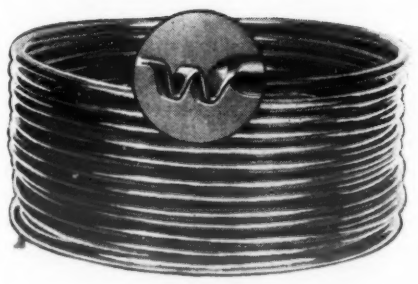
Celotex is strong but light, easily handled, workable, is available pre-fabricated with close dimension tolerances to your specifications, cuts assembly costs. There is no material more widely known or more extensively used. We invite consultation with our refrigeration specialists.

THE CELOTEX COMPANY, 919 No. Michigan Ave., Chicago, Ill.

CELOTEX
BRAND
INSULATING CANE BOARD
Reg. U. S. Pat. Off.

BUILDS • INSULATES • DECORATES
SUBDUES NOISE

WOLVERINE



REFRIGERATION TUBING IS PREFERRED

BY THE INSTALLER—Because it is clean and smooth with a uniform soft temper and always easy to handle. The dehydrated tube is absolutely dry.

BY THE JOBBER—Because the demand for Wolverine Tube is general throughout the industry. Stock turnover is more rapid and profits larger due to increased sales.

WOLVERINE TUBE CO.
SEAMLESS COPPER BRASS & ALUMINUM
DETROIT MICHIGAN

Typical Test Setup

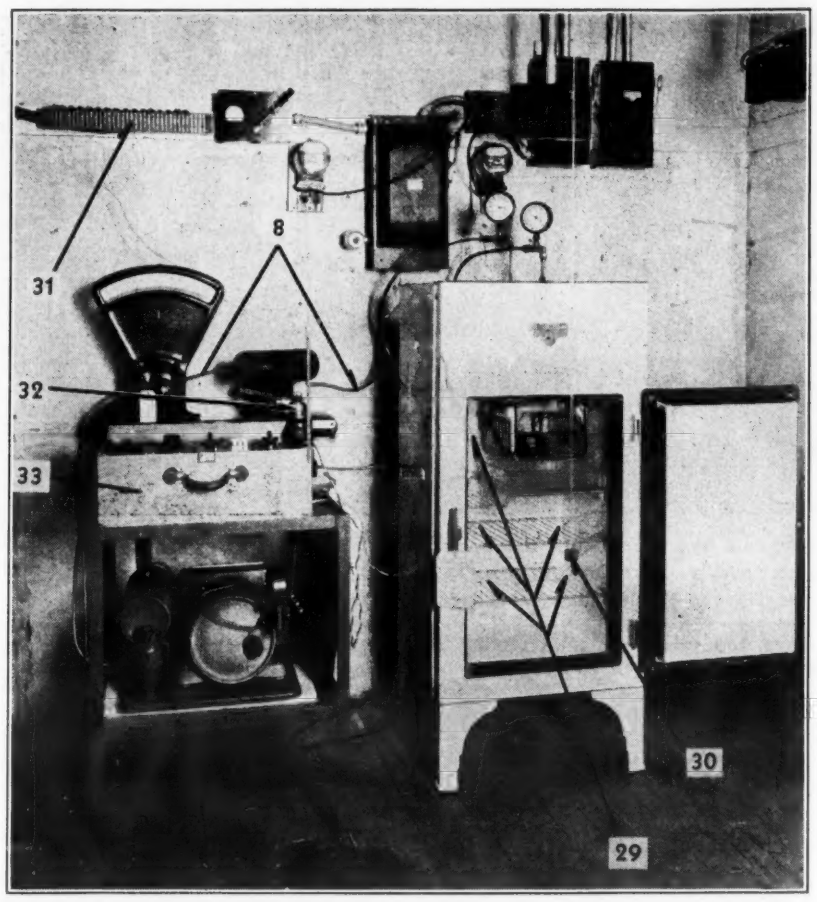


Fig. 2. Typical test setup for measuring the heat leakage of a domestic refrigerator cabinet. The parts numbered and designated in the photograph are referred to throughout the accompanying article.

Westinghouse Uses New Measurement For Heat Leakage

(Concluded from Page 6, Column 5)

This is necessary in order to insure that any pulsating of the valves will not result in slugs of liquid refrigerant being carried past the suction line thermocouple. For, obviously it would be impossible to obtain an accurate measurement of the heat content of the suction vapor if it contained any unvaporized refrigerant.

The amount of refrigerant charge in the system is such that as a stable condition is approached the first receiver tank is practically empty and the second tank, on the scales, is full. As a rule about 30 to 36 hours have elapsed before the cabinet temperature is stabilized at the desired value. As soon as a stable condition is reached the scale reading and a complete set of temperature and pressure readings are recorded. The valve between the two receiver tanks is then closed and the time recorded.

Since the tank on the scales is full and the other one practically empty, refrigeration continues uninterrupted with the full tank supplying refrigerant to the evaporator. After being recondensed by the condensing unit refrigerant is stored in the first tank.

The flow rate measurement is accomplished by noting the decrease in weight of the tank on the scales over a definite time interval. The tank used has a capacity of approximately 6 lbs. of sulphur dioxide so that a weighing run of several hours can be conveniently made. At the end of the weighing period another complete set of readings are recorded and the valve between the tanks is reopened. The heat leakage can now be calculated from these data as outlined above under the paragraphs entitled, "Principle of Operation."

Summary

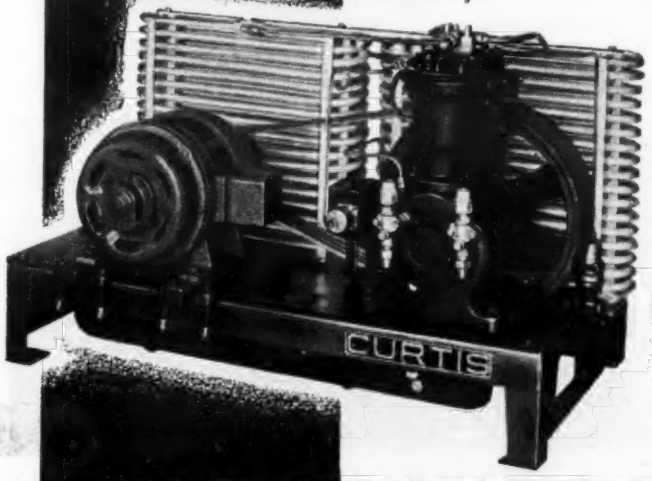
By this method of testing the heat leakage of a cabinet is determined under actual operating conditions. This means that normal circulation conditions, normal moisture distribution in the insulation, and normal mean insulation temperature prevail.

In a series of check tests we have found that the maximum variation in several independent tests on a cabinet does not exceed 1 per cent which shows that the method is accurate and dependable. The total elapsed time required for a test by this method is approximately 40 to 48 hours whereas over twice that was required with the method previously used.

CURTIS OFFERS

- Fair Policy—
  81 Years' Successful Merchandising
- Quality Workmanship—
  41 Years' Building Compressors
- A Complete Line—
  56 Units 1/6 to 15 H. P.
- Financial Stability—
  Highest Capital and Credit Rating Dun and Bradstreet—AaA1
- Proven Design—
  13 Years' Building Refrigeration Units

Only by building permanently on this complete combination can you expect sure profits in this fast-growing industry.



• Some desirable territories are still open for reliable distributors.

•

Write for details.

CURTIS

CURTIS REFRIGERATION MACHINE CO
Division of Curtis Manufacturing Company
1912 Kienlen Avenue, Saint Louis, Missouri

Safety Council Gives Data on Industry's 1934 Accident Rate

CHICAGO—A 27 per cent reduction in the accident severity rate of the refrigeration industry from 1933 is shown in 1934 accident statistics just released by the National Safety Council. The refrigeration industry rate, however, is eight per cent higher than that of 1933.

The frequency rate is based on the number of disabling injuries per million man-hours of work. The injury severity rate is based on the number of days lost as a result of injuries, per thousand man-hours of work.

On the whole, these changes in rate compare favorably with increases of five per cent in frequency and severity rates made by all industries in the 30 mapor classifications of the council, during the year.

The 1934 refrigeration rates are based on reports from 71 plants, whose employees worked 21,645,000 man-hours, averaging 27.67 for frequency rate, in comparison with 15.29 for all industries, and 0.78 for severity, as compared with 1.70.

In the list of 30 major industries, refrigeration ranks third on the basis of the severity rate and twenty-sixth on the basis of frequency.

Temporary disabilities constitute 98 per cent of all the 1934 injuries of the refrigeration industry. While substantial progress has been made in eliminating them, their severity has decreased only fifteen per cent since 1928. Permanent partial disabilities have increased 73 per cent in severity since 1928, and 165 per cent in frequency.

For all disabling injuries, however, the rate has been reduced 54 per cent in frequency and 76 per cent in severity, since 1928.

Contrary to the 1933 experience, frequency and severity rates for 1934 were highest in the larger plants and lowest in the small units. The rates were: Large units, 28.02 in frequency and .80 in severity; middle-sized units, 27.41 in frequency and .77 in severity; small units, 16.79 in frequency and .21 in severity.

Small plants made the largest reduction over 1933 in frequency rates, but middle-sized units made the most improvement in severity. The changes in rates between 1933 and 1934 are: In large plants, the frequency increased 14 per cent, while the severity decreased 12 per cent; in middle-sized, the frequency decreased 18 per cent and the severity decreased 71 per cent; and in small plants, the frequency decreased 56 per cent and the severity decreased 48 per cent.

Service Men Attend Crosley School

CINCINNATI—Five dealers' service men attending the Crosley refrigeration service school, held at the factory here, are: Bern Kiester, Kiester Electric Shop, Ligonier, Ind.; C. F. Bragg, Gauley Mountain Coal Co., Anstead, W. V.; William Anglin, Munday Auto Supply Co., Reading, Mich.; M. Lacey, Banner Furniture Co., Muncie, Ind.; and James Burch, Morgantown, Ky.

German Manufacturer Visits Crosley Plant

CINCINNATI—Alfred Eickhoff of Eickhoff Brothers, manufacturer of coal mining machinery at Bochum, Germany, and Fritz Kleffner, representative of that company with headquarters in Scranton, Pa., were recent visitors at the Crosley Radio Corp. factory here. Mr. Eickhoff and Mr. Kleffner are on a tour of American industrial centers to study American production methods.

Imperial Brass Makes Set of Swedging Tools

CHICAGO—A set of swedging tools in a light metal case, designed for emergency work on tube connections, has just been put on the market by the Imperial Brass Mfg. Co. Price of the outfit is $6.

The set takes care of occasions when the necessary fitting is not at hand, and too much time will be lost by waiting for one.

Operation of joining the two pieces of tubing is easily performed by enlarging the inner diameter of one of them to permit the insertion of the other. Both portions are then soldered together.

The enlarging is done by driving a swedging tool into the end of one of the pieces.

Six swedging tools are made, of ¼, ⅜, ½ 5/16, ⅝, and ¾-in. outside diameters.

A slotted bar, furnished with the outfit, holds the tubing while swedging takes place. The tools are sold separately, if desired.

Landers, Frary & Clark Holds Service Schools

NEW BRITAIN, Conn.—A series of special sales and service meetings with West Coast distributors of Universal electric refrigerators was conducted during the latter part of May by W. J. Cashman, eastern sales representative for Landers, Frary & Clark, this city, manufacturer of Universal electrical appliances.

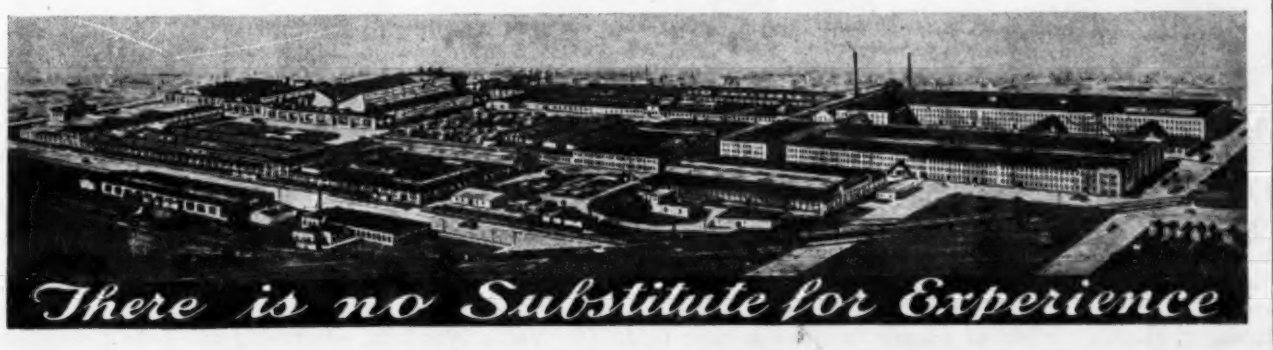
Distributors cooperating with Landers, Frary & Clark in sponsoring the meetings included: Arizona Hardware Supply Co., Phoenix, Ariz.; California Hardware Co., Los Angeles; Thomson-Diggs Co., Sacramento, Calif.; Seller-Lowengart Co., San Francisco; and the M. Seller Co., Portland, Ore.

VALUE

The value of a Servel commercial refrigeration franchise is enhanced by several definite advantages. *The wide variety and great adaptability of Servel equipment* opens to the dealer the doors of every market for refrigeration and air conditioning. *The low cost of Servel ownership* permits him to compete on a price basis with any other reputable product. Finally, *Servel's dependable performance* under all operating conditions results in a minimum of service expense, and—thanks to the good will of satisfied users—a constantly increasing volume of business.

SERVEL
COMMERCIAL REFRIGERATION
SERVEL, INC. *Commercial Refrigeration Division* EVANSVILLE, IND.

This modern 30-acre plant is the home of Servel Commercial Refrigeration and the world-famous Electrolux, the Servel Gas Refrigerator



PERSONALITIES

By George F. Taubeneck

Flat Tire

Last Sunday JACK CUTTING and the writer were peaceably ensconced in the editorial inner sanctum sanctorum when the ringing of a telephone smacked the silence of the room on the kisser.

"Is this the editor of REFRIGERATION NEWS," asked the voice on the other end of the wire.

"Yes, sir."

"Well, the right front tire on your Auburn is flat, and I thought you'd like to know about it."

"Thanks, pal, I'll go right out and see about it. Who is this?"

"Why, you don't know me, but I'm one of your oldest subscribers. My name is M. M. MILLER, and I'm from Baltimore. I recognized your bullet-shaped car from pictures you've published of it, and when I saw it with that flat as I passed down Cass in a taxi a few moments ago, I decided to call you up and tell you."

"That's mighty fine of you, Mr. Miller. If you're going to be in town awhile, I'd like to meet you."

So we had a good dinner together.

Mr. Miller, it turned out, is an ice man. He is with the Hoffberger interests in Baltimore—an organization which supplies that city with many essential services, such as fuel, ice trucking, and whatnot. Mr. Miller's job is to build ice refrigerators. And therein lies a tale.

• • •

$1.00 a Week

Hoffberger ice is being sold in greater quantities today than ever before in the history of the company. And it's all due to the success of a simple but highly extraordinary plan.

The concern will supply a customer with a modern 5½-cu. ft. ice refrigerator *and all the ice he needs* for $1.00 a week! That's for eight months of the year. During the four coldest months the charge is only 50 cents per week.

There's nothing else to pay. Moreover, the refrigerators are styled in the modern manner, and look so much like electric refrigerators that the users feel no inferiority on that score when friends come into their kitchens.

Some 7,500 of these Hoffberger-made refrigerators have been put out in a little more than a year, and the demand considerably exceeds the supply. The only advertising of the plan has been of the word-of-mouth variety.

The 12 Hoffberger ice plants have been kept running at capacity during warm weather since the plan was inaugurated, Mr. Miller states.

More than that, it has been necessary to keep at least one plant operating at top speed even during the coldest weather. This winter was the first that all 12 plants have not been closed simultaneously for equipment rehabilitation during cold weather.

Mr. Miller is on a western buying trip, visiting suppliers and lining up contracts for parts and materials for his 1936 refrigerator models. He used to be with Ottenheimer (large manufacturer of display cases), and is thoroughly versed in the art of refrigerator cabinet manufacturing.

"ELECTRIC REFRIGERATION NEWS," he avers, "is the livest and most interesting paper we've ever seen. We read it religiously each week.

"Almost everybody in the ice industry, I believe, is appreciative of the fact that ELECTRIC REFRIGERATION NEWS never knocks ice. You have always been eminently fair in your treatment of any news or editorial discussion pertaining to ice refrigeration.

"We think that it doesn't pay to knock electric refrigeration—although we do feel we should advance the competitive merits of ice in our sales presentations. But we feel sure that the electric refrigeration industry has done us a great service in making the nation refrigeration-conscious.

"There's no question, we feel, but that our present prosperity is due in a large measure to promotional work done by electric refrigeration manufacturers, distributors, and dealers."

• • •

85,000 Ice Refrigerators

While we are on the subject of ice, it might be well to note that one of the leading insulation manufacturers —who wishes to remain anonymous in connection with this information— tells us that he supplied one maker of ice boxes with enough insulation for 85,000 boxes last year; and that this year that figure seems likely to be exceeded by a considerable margin!

He attributes this success of one ice-box manufacturer to intelligent promotion, a beautifully styled box, and improvements in construction which enable the box to hold a less-than-50° temperature for more than 24 hours. The box compares in price with the cheapest models of electric refrigerators now on the market.

Operation economy, freedom from service troubles, and adequate moisture content of the air inside the box are the principle sales arguments for this deluxe ice box.

• • •

No Caps & Gowns

Although this is the season of commencement oratory and sweet-girl graduates, we hadn't expected to be invited, somehow, to any graduation exercises this year. But we were, and it was to those of a highly unique school—a college for Chrysler employees.

Desirous of bridging the gulf between practice and theory, Chrysler officials in 1931 established the Chrysler Institute of Engineering, following research by Prof. JOHN J. CATON, former head of the automotive engineering department of the University of Detroit.

Students at the institute, chosen on a competitive basis, represent outstanding graduates of American and foreign universities.

School courses sponsored by WALTER P. CHRYSLER and FRED M. ZEDER, vice president in charge of engineering, call for practical engineering work in Chrysler departments to supplement collegiate theoretical training.

Each student is rotated in periods of one to four months in each department. They are given the same problems to solve as the resident engineer. They are permitted to test and analyze experiments of practical engineers.

Upon completion of two years' intensive training, students are awarded a master of mechanical engineering degree. These graduates are then employed by Chrysler in the particular engineering department which they and company officials feel best suited to their ability.

So successful had this embryo college proved by 1933 that an undergraduate school was established, free to Chrysler, Dodge, and De Soto employees.

Under a plan adopted by Prof. Caton, now educational director of Chrysler Institute, graduate students teach undergraduate courses, thus furthering exchange of practical and theoretical ideas.

The undergraduate school offers a high school diploma and a four-year college degree. Classes meet nightly five times a week.

Subjects offered include a full course in mechanical engineering, commerce and finance, business administration, accounting, bookkeeping, commercial law, psychology, public speaking, body designing, mechanical drawing, stenography, and special language courses.

At the present time 856 employees are taking courses in the undergraduate school, and 55 men are enrolled in the graduate school. Nearly 1,000 employees are on a waiting list. Average age of the undergraduate student is 32, with students at 60.

In the short span of four years an experimental undertaking involving some 50 college graduates has expanded to an institute providing higher learning to a thousand persons.

An institution has been developed offering courses leading from a high school diploma to a doctor's degree.

Ideal of the founders of this Chrysler college has been development of specific knowledge at the point where it is in most demand—a new conception of the university idea.

• • •

A Trip Through the Kelvinator Plant

When the American Society of Refrigerating Engineers came to Detroit for the annual spring meeting, one of the events on their program was a trip through the Kelvinator plant.

Just to give other readers a view of what the A.S.R.E. men saw out there, we'd like to quote our friend, C. L. THOMPSON, financial editor of the *Detroit Times*, who went through the big factory out on Plymouth Road. Wrote he:

"Largest independent manufacturer of electric refrigerators and second largest in the industry, Kelvinator Corp. today constantly is setting new marks in efficiency and production.

"One of the most striking features of the three-story plant on Plymouth road is the seemingly intricate yet simple system of automatic conveyors used on the production lines.

"So well conceived and operated is the conveyor system that all installations of the refrigerator equipment in the cabinet, which is manufactured in the Grand Rapids plant, that only one side of the packing case is removed while the refrigerator is being completed in the local plant.

"Carloads of cabinets arrive hourly at the factory here and after passing through the entire plant leave the opposite end of the building, ready for home installation.

"An example of the accuracy demanded by this system of production, one of the most striking in any line of manufacturing activity, is that for every five persons engaged in production, there is one person charged with inspection of the finished product.

"That the conveyor system of handling its product is an answer to its sales demand is shown by the fact that there are two and one-half miles of conveyors in the building, which occupies 563,000 square feet of floor space.

"Through stressing the need for mass production, which has seen its plant capacity increased tenfold the last seven years, Kelvinator at the same time exacts a severe premium for accuracy.

This is particularly true in the inspection department where electric amplifying gauges approve or reject wrist pins to the 20-thousandths of an inch.

"A trip through the plant demonstrates the methodical and systematic methods used in modern production.

"On the first floor the motors, compressors, and other interior equipment, some of which are produced by independent manufacturers, are assembled. Riding on conveyors they are carried to the second floor, where a constant stream of cabinets flow by the men on the assembly line.

"Borrowing from the motor makers, the refrigerator industry requires one or two operations from each worker as the cabinets ride by. At least 100 operations are completed on this assembly line in addition to at least that many in the machine division.

"To complete a refrigerator, more than 50 hours of work are required in the local plant, about equal to the elapsed time needed to produce the cabinet in Grand Rapids. After the mechanical installations, which takes about five and one-half hours, are made in the cabinet they are sent on conveyors to the testing department, where the compressor is charged with a refrigerant and run 24 hours.

"If the performance is satisfactory they are returned to the assembly line for final work, which also takes about five and one-half hours. So well regulated and timed is the conveyor system that 29 carloads of cabinets may be received daily at the east end of the building, while the same number may be shipped, finished, from the west end of the factory.

"The sharp pickup in refrigerator sales is keeping the plant busy these days. Production is running about 1,300 home refrigerator cabinets daily, while ice cream cabinets are being turned out in the greatest volume in the company's history.

"Kelvinator is also busy in its air conditioning, oil burner, and water cooler departments. In all about 3,000 persons are employed now, and the peak of the year has not yet been reached."

• • •

Share What Wealth?

A fellow business journalist, CHARLES J. HEALE, has produced the following laughable commentary on Share-the-Wealth plans:

The population of the U. S. A. is reported at	124,000,000
Eligible for old age pension under Townsend Bill	50,000,000
	74,000,000
Persons prohibited under child labor laws and working under government jobs	60,000,000
LEAVES JUST	14,000,000
No. of persons unemployed	13,999,998
Balance to produce the Nation's goods	2

This leaves just you and me and I am all worn out.

Busy Publisher Welcomes Home Co-Ed Daughter

Publisher F. M. Cockrell gets an urgent call over the phone in the editor's office to come to Chicago, while his daughter, Helen, just back from her first year at Duke university, is amused by the much-discussed candid snapshot of mountainous George Christensen sleeping in air-conditioned comfort.

New Steps for the BNP Entrance

Doing a small construction job with dispatch. Workmen pouring concrete into the forms for the new steps in front of the Business News Publishing Co. offices. The foreman (in dark clothes at left of both pictures) seems concerned with passing traffic.

Kelvinator Executives Work Hard

Two candid camera views of R. I. Petrie, Kelvinator Corp.'s busy sales manager. So impatient is Mr. Petrie for hot weather, to send dealers' refrigerator sales marks soaring, that he's already taken off his coat, in anticipation of the busy time he'll have then.

Officials of Kelvinator Corp. are looking ahead to a busy summer, as these candid camera photos taken of them in their offices indicate. (1) Walter Jeffries, manager of the recently-created operations division of the advertising and sales promotion department, maps out a campaign to capture summer business. (2 and 3) John Garceau, air-conditioning sales promotion manager, studies results of recent activities in that field. (4) Vance Woodcox, advertising and sales promotion manager, says dealers are reporting many inquiries from the national magazine campaign. (5) J. A. Harlan, manager of commercial sales, was so busy checking orders that he didn't even have time to look up.

Air Conditioning in Crosley Factory Helps in Maintaining Close Tolerances

CINCINNATI—Crosley Radio Corp. has put into operation in its plant here an air-conditioned assembly department, said to be one of the first of its kind, for the assembly of the Crosley refrigerator compressors.

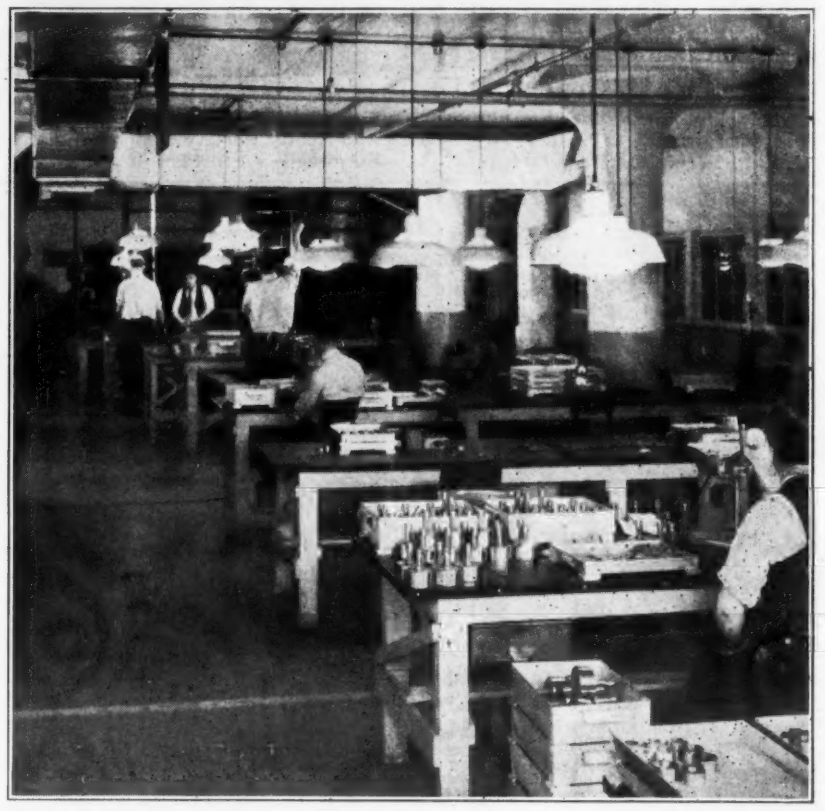
The purpose of constructing this department, Lewis M. Crosley, vice president and general manager explained, is to prevent all foreign particles, dust and even moisture from getting on the highly finished parts of Crosley compressors.

"The air is brought in from the outside," said Mr. Crosley, "and is forced through a filter to remove all foreign particles. Then it is put through cooling coils to remove the moisture content of the air, which is then tempered to the proper degree.

"In order to prevent all foreign matter such as the smallest particles of dust from getting into this department through partitions, doors and other openings, this section is kept under a slight pressure so that when a door or other aperture is opened the air is forced out of the room, preventing any dust and moisture-laden currents from entering.

"The air is changed completely every six minutes. The conditioned air is brought into this department through the duct which is built just beneath the ceiling. All equipment, including compressors, coils, fans, motors, thermostats, and filters are standard products, arranged and installed under the direction of Crosley engineers. All are located inside the large duct and none are visible.

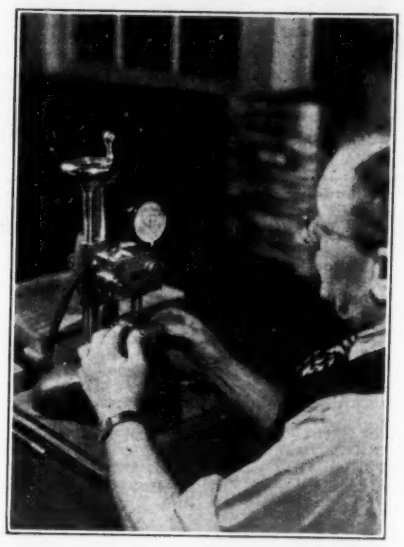
"We have one of the largest machine shops in this part of the country. New machines have been installed that are almost human in their operation. In fact, they make parts with such a high degree of accuracy that they can not be duplicated in many of the finest model-making shops.



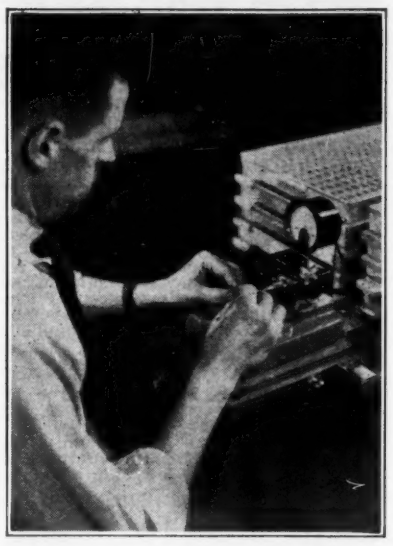
View of a section of the air-conditioned testing and measuring department in Crosley Radio Corp.'s refrigeration factory. Conditioned air is brought into this department through the duct which is seen beneath the ceiling.

"Tolerances have been reduced to new minimums to insure the highest efficiency and smoothness of operation. So fine is the workmanship on Crosley compressors that tolerances have been reduced from the thousandth part of an inch to the ten-thousandth part of an inch.

"With machining brought to so fine a standard it is necessary that all foreign particles, however small, be kept from entering the mechanism."



Inspecting and grading outside diameter of eccentric for size, taper, and roundness. Tolerance for size is .00015, for taper .0001, and for roundness .00005.



Testing the blade for squareness. The squareness of these blocks is held within .0001 per inch.

Combination gauge which measures the inside diameter, the roundness of the inside diameter, and also the throw of the eccentric. The outside diameter and the throw have a tolerance of .0005 and are graded into five grades varying but .0001.

Gauging the eccentricity of the inside and outside diameters, the size, taper, and roundness of the inside diameter, and also the squareness relation of the inside diameter with the faces.

This instrument gauges the inside diameter of the cylinder and also indicates the squareness relation of the bore to the face. The relation of the squareness to the bore must not exceed .0002 per inch. The inside diameter has a tolerance of .0005.

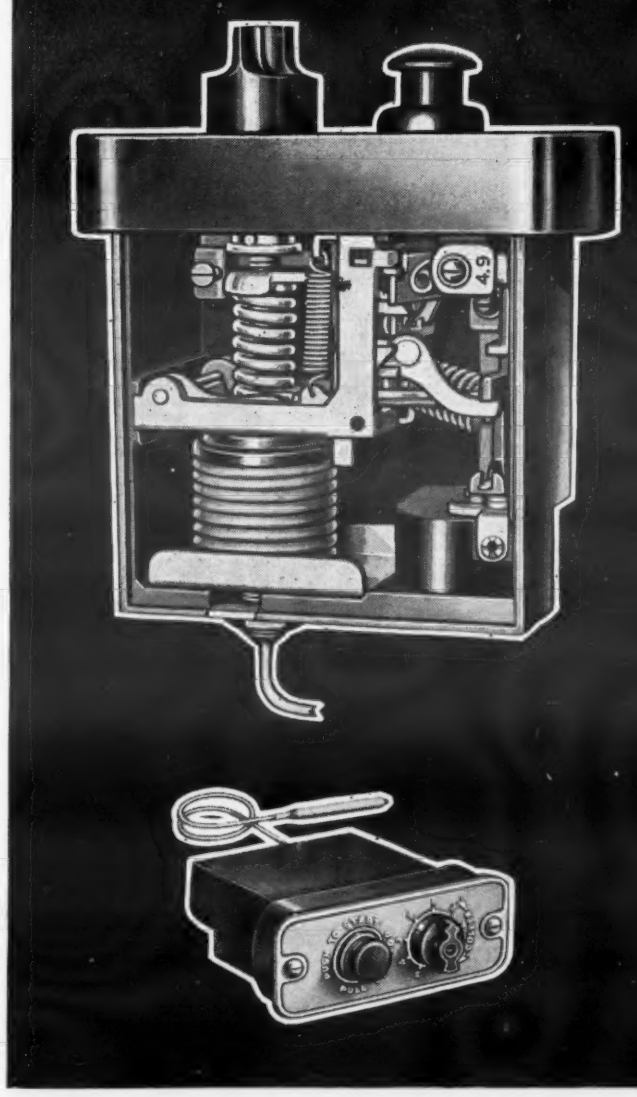
Centering the cylinder by means of radio amplification. This operation measures the concentricity of the cylinder with the eccentric stud by means of radio amplification which reveals very minute errors of concentricity by changes in the tone as the cylinder revolves around the stud.

Gauging the eccentric stud for diameter, squareness, and roundness. The diameter is held within .0005, the taper within .0002, and the roundness within .00005.

This shows the final assembly of all the parts of the rotor compressor. The operation will be completed when the dome which contains the stator windings is finally placed over the rotor assembly and bolted and dowled into place after centering.

PENN

REPLACEMENT



universal

THERMOSTAT

with compensated

BI-METAL

OVERLOAD PROTECTION

Now it's easy to replace worn-out or faulty controls on all types of domestic refrigerators or similar service. This new Penn Universal Replacement Thermostat, Type 201 Model 5TAC fits all boxes and meets every requirement.

It offers many outstanding features. Foremost of these is compensated Bi-Metal Overload Protection by means of a simple, trouble-free mechanism which replaces the old solder film type. Other features include not only the reliability of the Penn high speed contact structure but also an attractive, universal Escutcheon plate designed for either horizontal or vertical mounting; simple easy adjustment of both the range and differential; Cold Control; Defrost.

Complete Line of Accessory Equipment

A complete line of accessory equipment is available for making every type of installation. When you consider the millions of domestic refrigerators in service, you will understand why we recommend you stock an ample supply now of this new Penn Universal Replacement Thermostat. Write for the reasonable prices, and Free descriptive bulletins.

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

Pressure Controls Temperature Controls Safety Cut-Outs
Dual Controls Water Regulating Valves Room Thermostats
Humidity Controls Air Conditioning Controls
Controls With or Without Thermal Overload Protection

PENN
If it's PENN ··· It's RIGHT

HOUSEHOLD REFRIGERATOR SPECIFICATIONS

Specifications of 281 models of household electric refrigerators are presented in this issue. This data is a revision (with additions) of the information published March 20.

The net cubic foot content of the refrigerators is calculated on the basis of standards established by the National Electrical Manufacturers Association (Nema). Prices are installed or f.o.b. factory.

Manufacturers were asked to furnish the condensing unit capacity in pounds of ice melting effect per 24 hours (I.M.E. Lbs.) according to the following standards adopted by the American Society of Refrigerating Engineers (A.S.R.E.):

"The capacity of the condensing unit (compressor and condenser) should be the capacity expressed in pounds of ice melting effect per 24 hours of continuous operation in a 90° F. room and at a suction pressure equal to a 5° F. evaporator temperature.

"In conducting the test, the condensing unit should be set so that it is subjected to the same air circulation as it would normally receive in actual service. In other words, since the condensing unit is intended for self-contained installations, the circulation of air to the unit should be restricted in the same manner as would be the case if the unit were actually installed in the cabinet. One pound ice melting effect is equivalent to the extraction of 144 B.t.u."

In the majority of the specifications, the refrigerator weight is net while a few companies furnished shipping weights. Cabinet dimensions read height x width x depth. Shelf area is calculated on Nema standards.

Frigidaire

Frigidaire Corp., Dayton, Ohio.

Cabinet—Frigidaire 1-door cabinet for all models except Super and Deluxe models 12-35 and 15-35, which have 2 doors; and WP18-35, which has 4 doors. Steel and wood frame, composition breaker strip, rubber gasket. Frigidaire insulation. Thickness of insulation—Koldchest, D3-35, Standard series, and Master series, sides, back ,and bottom, 2 in., door, 2¼ in. (except Koldchest and model D3-35 where thickness in door is 1½ in. and 2 in., respectively) top, 2 in. (except Koldchest where it is 1½ in.); Super 5-35 and Super 6-35 top, sides, and back, 1¾ in., bottom, 2 in., door 2 1/16 in., Super 7-35 and Super 9-35 top, sides, back, and bottom, 2 in., door 2 1/16 in.; Super 12-35, Super 15-35, Deluxe 12-35 and Deluxe 15-35, top, sides, back, and bottom, 2½ in., door, 2¾ in.; WP18-35, 2½ in. throughout. Chromium-plated Ternstedt hardware.

Compressor—Hermetically sealed rotary compressor for Koldchest D3-35 and Standard series, open-type reciprocating 2-cylinder compressor for all other models. Compressor speed—rotary units 1730 r.p.m.; Master 4-35, 300 r.p.m. rest of Master series and Super 5-35, 6-35, and 7-35, 350 r.p.m.; Super 9-35, and 12-35, 440 r.p.m.; Super 15-35, Deluxe 12-35 and 15-35, 575 r.p.m.; WP18-35, 405 r.p.m. Rotary units direct-driven, others belt-driven. Bore 1⅛ in. and stroke 1 7/16 in. for all reciprocating compressors except WP18-35, which has bore and stroke of 1¾ in. Bellows and ring shaft seal for reciprocating compressors. Compressor below food compartment, except WP18-35, where it is remotely installed. Refrigerant charge—Koldchest, 11 oz.; D3-35, 14½ oz.; Standard 4-35, 17 oz.; Standard 5-35 and 6-35, 20 oz.; Master 4-35, 2⅛ lbs.; Master 5-35, and 6-35, and Super 5-35, and 6-35, 2⅜ lbs., Master 8-35 and Super 7-35, 2⅝ lbs.; Super 9-35, 2⅞ lbs.; Super 12-35, 3¼ lbs., Super 15-35, Deluxe 12-35 and 15-35, 3½ lbs.; WP18-35, 12½ lbs. Lubrication charge—Koldchest D3-35 and Standard series, 7 oz.; Master 4-35, and 8-35, and Super 7-35, 14 oz.; Master 5-35, 6-35, and Super 5-35, and 6-35, 10 oz.; Super 9-35, 12-35, and 15-35, Deluxe 12-35 and 15-35, 16 oz.; WP18-35, 3½ lbs.

Control—Frigidaire automatic thermostat temperature control on all except model WP18-35, which uses low pressure control. All models equipped with Cold Control for customer's adjustment. Automatic reset defroster (manual off, automatic on) on all models except WP18-35, which has a manual on and off switch for defrosting. Economy setting supplied on all except Koldchest, D-3-35, Standard Series, and WP18-35.

Evaporator—Frigidaire plate-type brass evaporator, except model WP18-35, which has boiler-and-tube type. Restrictor refrigerant control for rotary units; high side float for reciprocating units, except WP18-35, which uses low side float. Anodically treated aluminum ice cube trays; ice cube tray release.

Condenser—Frigidaire plate-type natural draft condenser for rotary units, fan-cooled fin tube condenser for reciprocating unit

Motor—Delco split-phase motor for rotary units; and Delco capacitor on repulsion induction motor for reciprocating compressors.

Special Features—Standard series—interior light, utility basket, hydrator. Master series—interior light, servashelf, utility basket, hydrator. Super series—interior light, servashelf, utility basket, hydrator, quick freeze control. Deluxe series—interior light, ice chest, frozen storage chest, utility basket, hydrators with chromium-plated front, servashelf, water cooler, 5 glass containers on revolving base, glass and hollow rolling pin.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	I.M.E. B.T.U.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
Koldchest ..	2.1	*$ 79.50	†...	‡...	1/20	§F114	150	D 36 x 23¾ x 20½ P 14¾ x 19¼ x 13⅝	4.1	2	2	36	3
D-3-35	3.1	99.50	...	...	1/20	F114	168	D 44¼ x 22⅝ x 22½ P 23¼ x 17⅞ x 13¼	6.4	3	2	41	4
Std. 4-35 ...	4.1	119.50	...	...	1/16	F114	198	D 49⅝ x 24 x 23½ P 27½ x 19¼ x 14⅛	8.4	3	2	41	4
Std. 5-35 ...	5.2	149.50	...	...	1/12	F114	224	D 52⅜ x 25 x 25¼ P 29⅝ x 20¼ x 16	10.4	3	4	83	8
Std. 6-35 ...	6.1	183.00	...	...	1/12	F114	262	D 55 x 26¼ x 25¼ P 32¼ x 21½ x 16	13.4	4	4	83	8
Master 4-35.	4.1	134.50	128	780	1/6	SO_2	276	D 53 x 24 x 22½ P 27½ x 19¼ x 14⅛	8.4	3	3	60	7¼
Master 5-35.	5.2	163.00	150	1,075	1/5	SO_2	317	D 55¼ x 25 x 24¼ P 29⅝ x 20¼ x 16	10.0	3	3	72	8¾
Master 6-35.	6.1	199.50	150	1,075	1/5	SO_2	333	D 57¾ x 26¼ x 24¼ P 32¼ x 21½ x 16	13.0	4	3	72	8¾
Master 8-35.	8.1	239.50	150	1,075	1/5	SO_2	461	D 60½ x 30 x 26¼ P 34½ x 25 x 17½	16.7	4	6	120	14½
Super 5-35..	5.2	184.50	150	1,075	1/5	SO_2	359	P 56¼ x 24⅞ x 25¼ P 29⅝ x 20¼ x 16	10.0	3	3	72	8¾
Super 6-35..	6.2	224.50	150	1,075	1/5	SO_2	370	P 58⅞ x 25¼ x 26⅜ P 32¼ x 20½ x 17	12.4	4	3	72	8¾
Super 7-35..	7.1	259.50	150	1,075	1/5	SO_2	419	P 60 x 28 x 27 P 33⅛ x 22⅞ x 17½	15.6	4	6	120	14½
Super 9-35..	9.1	309.50	188	1,300	1/4	SO_2	479	P 63 x 31½ x 27 P 36¼ x 26¼ x 17½	17.9	4	6	120	14½
Super 12-35.	12.1	374.50	188	1,300	1/4	SO_2	566	P 63¾ x 38⅛ x 30 P 35½ x 32 x 19¾	24.6	8	6	156	19
Super 15-35.	15.1	466.00	245	1,560	1/3	SO_2	602	P 65 x 46¾ x 30 P 35½ x 39¾ x 19¾	29.4	7	8	208	25½
Deluxe 12-35	10.0	431.50	245	1,560	1/3	SO_2	602	P 63¾ x 38⅛ x 30 P 35½ x 32 x 19¾	19.6	4	6	156	19
Deluxe 15-35	13.1	521.50	245	1,560	1/3	SO_2	652	P 65 x 46¾ x 30 P 35½ x 39¾ x 19¾	26.6	4	6	156	19
WP 18-35 ..	18.3	518.00	...	...	1/3	SO_2	705	P 71⅝ x 46½ x 28½ P 48 x 39¼ x 19¾	33.8	9	6	144	20¼

*First zone. †Compressor capacity in pounds I.M.E. per 24 hours under A.S.R.E. standard conditions (5° F. evaporator). ‡Compressor capacity in B.t.u.'s per hour with 90° F. ambient temperature and 20° F. saturated suction temperature. §F114 $C_2Cl_2F_4$ (Dichlorotetrafluoroethane).

General Electric

General Electric Co.,
Specialty Appliance Sales Dept.
Nela Park, Cleveland, Ohio.

Cabinet—G-E 1-door cabinet for all models except KF12 and KF15, which have 2 doors. Steel frame, Textolite breaker strip, molded rubber gasket. Thermocraft insulation thickness in model X-4—top, sides, back, door 2½ in., bottom 2⅝ in.; X-5—top 2½ in., sides and back 2⅝ in, door and bottom 3¼ in.; X-6—top 2½ in., sides and back 3 in., door 3¼ in., bottom 2⅝ in.; X-7—top 2½ in., sides and back 2⅝ in., door 3¼ in., bottom 2⅞ in.; T-5—top and sides 2½ in., back 2¼ in., door 3¼ in., bottom 3⅜ in.; T-7—top, sides, and back 2½ in., door 3¼ in., bottom 3⅞ in.; T-9—top 3 in., sides and back 3½ in., door 4¼ in., bottom 3⅞ in.; K-4 and K-5—top 3½ in., sides 2½ in., back 2¼ in., door 3¼ in., bottom 2¾ in.; K-7—top 3½ in., sides 2¾ in., back 2⅝ in., door 3¼ in., bottom 2¾; KF-12 and KF-15—top 2¼ in., sides 2¾ in., back 3½ in., door 3¼ in., bottom 3 in.; LK-1 and LK-2—top and door 2 in., sides, back, and bottom 2½ in. G-E polish chrome hardware.

Compressor—G-E hermetically sealed reciprocating 1-cylinder compressor in all models except KF models which use an open-type 2-cylinder compressor. Sealed units direct-driven with compressor speed 1740 r.p.m. Open-type units belt-driven with compressor speed 450 r.p.m. Bellows shaft seal for open-type unit. Bore 1¼ in. in all models except KF series which have 1½-in. bore. 1⅜-in. stroke for KF models, .85 in. for model T9, .66 in. for all other models. Compressor located below food compartment in K, LK, and KF series; above food compartment in all others. Refrigerant charge—1½ to 3¼ lbs. Lubrication—2 qts. of mineral oil for hermetically sealed units; 1⅛ pts. for open-type units.

Controls—General Electric thermostat type temperature control. Adjustable by user. Has 9 freezing speed settings. Defrosting is semi-automatic, this same control setting being used as "vacation" setting. Models LK-1, LK-2, and X-4 have manual defrosting. Thermostat non-adjustable but automatically compensates to maintain uniform cabinet temperature.

Motor—G-E capacitor for KF line; G-E split-phase induction motor for all others. Oil motor on open-type units annually.

Condenser—G-E fan-cooled fin tube condenser for KF models; all others form steel natural-draft condensers.

Evaporator—G-E folded and welded and stainless steel evaporator. High side float refrigerant control. Aluminum and rubber ice trays. Du-Flex trays.

Guarantee—System, 1 year with additional 4 year service contract on sealed machines; cabinet, 1 year. Serviced by dealers only.

Special Features—Forced feed lubrication, oil-cooling of motor and compressor, self-aligning bearing, pressure operated on loader, acoustic mufflers, ice trays and direct contact with refrigerated surfaces, interior light, pedal door opener, sliding shelves, vegetable, fruit drawers.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: P—PORCELAIN, G—GLYPTAL BAKED ENAMEL EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
X-4	4.0	*$129.50	83	1/8	SO_2	255	G 61½ x 23½ x 19⅞ P 27¼ x 18½ x 14⅞	8.1	3	2	40	4
X-5	5.0	169.00	83	1/8	SO_2	352	G 65¼ x 24 x 21½ P 32¼ x 18 x 16	8.9	3	2	40	6
X-6	6.3	204.00	92	1/8	SO_2	488	G 64¼ x 28⅞ x 22¾ P 32⅛ x 22 x 16⅝	11.8	3	4	84	8
X-7	7.0	239.00	92	1/8	SO_2	500	G 66½ x 28⅞ x 22¾ P 33⅞ x 22⅞ x 17	12.5	3	4	84	10¼
T-5	5.0	194.00	83	1/8	SO_2	362	P 65¼ x 24 x 21½ P 32¼ x 18 x 16	8.9	3	2	40	6
T-7	7.0	274.00	92	1/8	SO_2	506	P 67¼ x 28⅞ x 22¾ P 33⅞ x 22⅞ x 17	12.5	3	4	84	10¼
T-9	9.6	340.00	125	1/6	SO_2	700	P 68 x 34¼ x 26¼ P 34⅞ x 27⅛ x 19⅛	16.1	3	4	84	11¼
K-4	4.3	139.50	83	1/8	SO_2	320	G 52¾ x 23 x 23½ P 29 x 18 x 15¼	8.6	3½	2	40	4
K-5	5.2	169.00	83	1/8	SO_2	340	G 52¾ x 26¾ x 23½ P 29 x 21¾ x 15¼	10.2	3½	2	40	6
K-7	7.0	234.00	92	1/8	SO_2	415	G 56¾ x 29½ x 25¾ P 33 x 24 x 17	13.0	3	4	84	10¼
KF-12	12.5	470.00	169	1/3	SO_2	762	P 62½ x 39 x 28 P 37 x 33 x 19½	22.7	4	6	128	14½
KF-15	15.4	520.00	169	1/3	SO_2	862	P 62¼ x 46 x 28 P 37 x 40 x 19½	31.3	4½	6	128	16½
LK-1	....	79.50	80	1/8	SO_2	173	G 36 x 21 x 23⅞ P 13¼ x 16 x 16	....	...	2	20	2
LK-2	....	84.50	80	1/8	SO_2	186	G 36 x 21 x 23⅞ P 13¼ x 16 x 16	....	...	2	20	2

*Installed in zone 1.

Kelvinator

Kelvinator Corp., Detroit, Mich.

Cabinet—Kelvinator 1-door cabinet on all models but SD903, SD1268, and SD1525 which have 2 doors; and model SD2332 which has 3 doors. Wood and steel frame, panelyte breaker strip, rubber door gasket. Thickness of insulation—model CKN 2 in. throughout; model K300 sides and back 2¾ in., top, bottom, and door 2½ in.; model K425 back, door, and bottom 2½ in., sides and top 2 in.; models D873 and SD782 3 in. throughout; P425 top, bottom, back, and door 2½ in., sides 2 in.; models SD903, SD1268, SD1525, and SD2332, 3½ in. throughout; all others 2½ in. throughout. Chrome-plated hardware.

Compressor—Kelvinator open-type reciprocating compressor, 1-cylinder on model CKN, K300, K425, P425, K485, K541, P541, D513; all others 2 cylinders. 1¼-in. bore except models SD1525, and SD2332 which have 1⅛-in. bore. 1½-in. stroke except models SD1525 and SD2332 which have 1¾-in. stroke. Belt drive with following compressor speeds—models CKN, K650, P650, and D617 410 r.p.m.; models SD903, and SD1268 640 r.p.m.; models SD1525 and SD 2332 575 r.p.m.; all others 525 r.p.m. Sylphon shaft seal. Compressor below food compartment. Lubrication charge—model CKN 14 oz. other 1-cylinder models 19 oz.; models SD1525 and SD2332 32 oz.; other 2-cylinder models 26 oz.

Condenser—Kelvinator fan-cooled radiator-type condenser.

Control—Manual temperature control with wide cycle defrosting.

Evaporator—Kelvinator tinned copper tank-type in SD models, others of porcelain shell type. High side float refrigerant control. Anodically treated aluminum ice trays. Button tray release for trays in SD models; "Ramshorn" tray lifter in K, P, and D models.

Motor—Chiefly Delco make, with condenser start or capacitor a.c., or compound d.c.

Guarantee—System and cabinet, 1 year. Serviced by dealers only.

Special Features—D and SD models, door front "food file;" P models ,plain food file; D models, double depth dessert tray; P and SD models, serving tray lid on vegetable crisper; SD models, frost chest and isothermic freezing compartment; D and SD models, rearranging shelf and folding shelf; SD models, pastry set and water pitcher; K, D, and SD models wire fruit basket; all other models except K300 and CKN, crisper and electric light.

MODEL NO.	CU. FT.	INSTALLED §PRICE	*I.M.E. B.T.U.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
CKN	2.02	$ 79.50	530	1/8	SO_2	216	L 36 x 27⅞ x 19 P 12¾ x 23¼ x 13¼	4.29	2	2	42	3.2
K-300	3.10	99.50	680	1/6	SO_2	285	L 48¾ x 24⅜ x 20½ P 23½ x 18⅜ x 13½	7.91	4½	2	42	4.5
K-425	4.25	121.95	680	1/6	SO_2	315	L 48¼ x 24⅜ x 24⅛ P 24⅛ x 19¾ x 17	8.34	3½	2	42	4.5
P-425	4.25	152.50	680	1/6	SO_2	365	P 50¾ x 25 x 25 P 24⅛ x 19¾ x 17	8.62	3½	3	63	6.75
K-485	4.85	148.50	680†	1/6	SO_2	349	L 53⅝ x 25 x 25 P 27 x 19¾ x 17	10.07	4½	3	63	6.75
K-541	5.41	166.00	680†	1/6	SO_2	375	L 51⅞ x 28⅜ x 26¼ P 24⅝ x 22⅛ x 18⅝	11.17	3½	4	84	9.0
P-541	5.41	194.50	680†	1/6	SO_2	432	P 51⅞ x 28⅜ x 26¼ P 24⅝ x 22⅛ x 18⅝	11.17	3½	4	84	9.0
K-650	6.50	199.50	1030‡	1/6	SO_2	401	L 56¾ x 28⅜ x 26¼ P 29½ x 22⅛ x 18⅝	14.03	4½	4	84	9.0
P-650	6.50	232.50	1030‡	1/6	SO_2	464	P 56¾ x 28⅜ x 26¼ P 29½ x 22⅛ x 18⅝	14.03	4½	4	84	9.0
K-760	7.60	237.50	1300	1/4	SO_2	449	L 57½ x 31⅝ x 26¼ P 30¼ x 25¼ x 18⅝	16.76	4½	6	126	13.5
P-760	7.60	274.50	1300	1/4	SO_2	511	P 57½ x 31⅝ x 26¼ P 30¼ x 25¼ x 18⅝	16.76	4½	6	126	13.5
D-513	5.13	199.50	680	1/6	SO_2	402	P 51¾ x 29⅜ x 26¾ P 24⅝ x 22⅛ x 18⅝	10.66	3½	3	81	9.0
D-617	6.17	239.50	1030‡	1/6	SO_2	432	P 56⅝ x 29⅜ x 26¾ P 29½ x 22⅛ x 18⅝	12.80	4	4	108	12.0
D-736	7.36	289.50	1300	1/4	SO_2	478	P 57⅜ x 32⅝ x 26¾ P 30¼ x 25¼ x 18⅝	14.43	4	4	108	12.0
D-873	8.73	323.50	1300	1/4	SO_2	517	P 62¾ x 33⅝ x 27¼ P 35⅛ x 25¼ x 18⅝	17.70	5	4	108	12.0
SD-658	6.58	299.50	1300	1/4	SO_2	504	P 57⅜ x 32⅝ x 26¾ P 30¼ x 25¼ x 18⅝	12.94	5	4	81	15.0
SD-782	7.82	339.50	1300	1/4	SO_2	531	P 62¾ x 33⅝ x 27¼ P 35⅛ x 25¼ x 18⅝	16.20	4½	4	108	18.0
SD-903	9.03	379.50	1550	1/3	SO_2	714	P 66⅞ x 38 x 29 P 34½ x 28¼ x 19	18.42	4½	4	108	18.0
SD-1268 ...	12.68	489.50	1550	1/3	SO_2	938	P 66⅞ x 49 x 29 P 34½ x 39¼ x 19	25.05	6	6	162	28.0
SD-1525 ...	15.25	599.50	2400	1/3	SO_2	1036	P 73⅞ x 49 x 29 P 41½ x 39¼ x 19	30.63	7	6	189	31.0
SD-2332 ...	23.32	789.50	2400	1/3	SO_2	1425	P 73⅞ x 68¾ x 29 P 41½ x 59 x 19	45.55	13	9	243	37.0

*Compressor capacity given in B.t.u.'s per hour with 90° F. ambient temperature, 20° F. saturated suction temperature, and refrigerant vapor temperature entering the compressor 65° F. †Two-cylinder units with capacity of 1030 B.t.u.'s per hour, used in south and southwest. ‡Two-cylinder ¼-hp. unit with capacity of 1300 B.t.u.'s per hour, used in south and southwest. §Zone 1.

Imhoff Proposes Cooperative Campaign for Promotion of Electric Kitchens

CHICAGO—Inauguration of a co-operative plan for promoting the all-electric kitchen, developed somewhat along the lines of the old Refrigeration Bureau, with manufacturers of electrical appliances and utilities participating, was suggested at the recent second annual sales conference (held in Chicago precedent to the national convention in Atlantic City) of Edison Electric Institute by R. E. Imhoff, sales manager, merchandising division, Westinghouse Electric & Mfg. Co.

The proposition should be put up to the manufacturers through regularly organized channels—specifically, through National Electrical Manufacturers Association, with a pledge of support from the operating utilities, Mr. Imhoff declared.

How to Speed Up Sales?

"What we all want to know is—how to speed up the sale of these major load-building appliances so some of our present-day troubles and some of the troubles we anticipate will not be so severe," said Mr. Imhoff.

"We are all trying to find a way to do this. Every utility has some kind of a merchandising plan or program.

"Every manufacturer of major appliances has at least one plan designed for the utilities and some of the manufacturers are so nimble and prolific they will make you a plan while you wait."

"Conspicuous by its absence today," the speaker said, "is any semblance of a promotional plan or activity to increase the sale of major appliances which the industry collectively is behind. This condition has been talked about informally by both manufacturers and utility commercial men, but no very definite opinion has crystalized.

"One specific idea which has been talked about during recent months is a promotional activity built around the electric kitchen.

Three Necessary Factors

"For such a promotional activity to be successful and worth its cost, three things are necessary. First, and most important, it must have sponsorship. The plan must have a home, a place to start from. We may assume without further discussion, I believe, that the Institute will lend it sponsorship.

"The other two things such a plan must have are the enthusiastic support of a representative group of manufacturers and support and local direction and guidance by the utilities. I think you will agree there is no difference in relative importance between these latter two needs. If one or the other is lacking in proper degree, nothing worth while can be accomplished.

The question is, can we be reasonably sure such an activity will have support from these two directions? Frankly, I don't know, and I suggest we find out.

"The manufacturers' picture looks about like this to me. The makers of ranges, refrigerators, water heaters, and dishwashers would benefit from such a plan in about the order named.

"Take the refrigerator manufacturer first. To be perfectly blunt about it, they are not very 'industry minded.'

"In spite of the New Deal, they are still 'rugged individualists,' and furthermore, individually rugged and willing, apparently, to struggle along against the hazards and vicissitudes of competition, selling four refrigerators in one, super freezers, rollators, hermetically sealed mechanisms, and five-year protection plans.

"Today they don't even advertise, promote, and sell electric refrigeration. They did that job when the Refrigeration Bureau was in existence, and today they 'kind of stick their thumbs under their suspenders' and at least imply—'Why don't these range guys go on out and sell electric cookery?'

Gains for Range Makers

"You see, you utility men are customers and they are nice to you, but if you are exposed to them as a competitor they act naturally. But they are not hopeless and maybe I misjudge their frame of mind and attitude in this case.

"Take the range manufacturers next. They have the most to gain immediately from such a plan, in my opinion. They admit that in most communities electric cookery needs to be sold before electric ranges can be sold in volume. They admit the feasibility of an industry plan to sell electric cookery and have just made a very fine start.

"So far as the water heater manufacturers are concerned, I am frank to say I have no idea what their attitude is, or would be. In some sections of the country only a very small percentage of water heater installations are in the kitchen and in other sections most of them go into kitchens. I, personally, believe the water heater manufacturers have enough to gain to make it more than worth their part of the cost of supporting this activity.

"We can pass the dishwasher manufacturers for obvious reasons.

"Now, in case you are interested, my personal opinion is that a properly planned and properly organized promotional activity, built around the electric kitchen, would be a good thing. I think the time is ripe."

Reasons for Belief

Two reasons why Mr. Imhoff thinks so, are:

"Last October the Westinghouse Company ran a single page of advertising in *Better Homes and Gardens* featuring an electric kitchen. The advertisement showed a picture of a typical, standard, modern kitchen with the electrical appliances placed in order and scientific relation to the rest of the pictures.

The copy was brief and the readers were asked to write to our Kitchen Planning Department if they were interested in having such a kitchen. There had been no previous build-up. No Westinghouse advertising of any kind had been run in this magazine in earlier months of 1934. It was merely a trial balloon to see what would happen.

3,113 Inquiries Received

To date 3113 inquiries have been received.

"Most certainly this result proves keen, intense interests in kitchen modernization on the part of the general public represented by the home owner," said the speaker.

Reason number 2 is this—a couple of months ago Westinghouse organized and conducted at Mansfield a "Kitchen Clinic." Its purpose, as outlined to the people in attendance, was this:

"To clarify certain phases of the activity centering about the promotion, development, and use of the complete kitchen as a unit. It is also the aim of the Clinic to adopt or agree upon certain standards so that a uniform and well-organized plan may be presented to the American homemaker. In other words, it is the purpose, not only to establish a nomenclature for the industry, but to agree upon a standardization of equipment, design and functions insofar as is possible and advisable.

"It is the belief among many of the leading exponents of the complete kitchen unit that if the ideas and experiences of those who have been taking a lead in the kitchen planning can be crystallized to dominate or direct the promotion and development work, that this new activity or industry will receive material benefit."

Among others attending the Clinic were:

Mrs. Mildred Maddock Bentley, *Delineator;* Miss Eloise Davison, E. H. & F. A.; Miss Katherine Fisher, *Good Housekeeping Institute;* Mrs. Mary Davis Gillies, *McCall's Magazine;* Mr. Lurelle Guild, *Pictorial Review;* Miss Jean Guthrie, *Better Homes and Gardens;* Miss Faye I. Hamilton, *McCalls Magazine;* Mrs. Frances T. Heard, *House Beautiful & Home & Field;* Mr. T. L. Henderson, *Good Housekeeping Institute;* Miss Julia Bliss Joyner, *Pictorial Review;* Mrs. Nell B. Nichols, *Woman's Home Companion;* Miss Grace L. Pennock, *Ladies' Home Journal;* Miss Demetria Taylor, *Good Housekeeping Institute.*

"Certainly these names read like a 'Who's Who' of the expert homemakers of America," said the Westinghouse executive, and when they are willing to devote two entire days to the problems of kitchen planning and promotion, the subject must be of major interest to the people whom they serve.

"The electrical industry has a chance to benefit and profit from this interest in exactly the degree to which the industry is organized. Don't forget that a scientifically planned kitchen does not require an electric refrigerator or an electric range. Argue all you want to about a kitchen not being modern unless it is completely equipped electrically and the fact still remains that millions of people believe differently.

"This is my suggestion. You utility men here are truly representative of the commercial organizations of the operating utilities. Decide whether or not you want a promotional activity built around the Electric Kitchen.

"If a majority opinion is that you do not—that's that. If a majority opinion is that you do, then put it up to the manufacturers through regular organized channels—specifically, through Nema.

"Along with the proposal to Nema should go a pledge that the operating utilities will actively and wholeheartedly give such an activity leadership and support in the field. Without such support and leadership the activity will fail, no matter how well it is planned and organized. The manufacturers are entitled to this assurance before they put their money or the line to get the activity started.

"If the Nema sections and divisions whose members may reasonably be expected to lend support to the activity decide against it, there is still the opportunity to approach some of the manufacturers individually and enough of them may be favorably inclined to make it feasible to go ahead. Those who don't would then get a free ride, but, like death and taxes, the 'thumbers' will always be with us.'

G-E Cinematizes Its Sales Story

William Collier, Sr., and Johnny Mack Brown in a laboratory scene from the G-E commercial movie "Three Women" which had its premiere recently at a downtown theater in Cleveland.

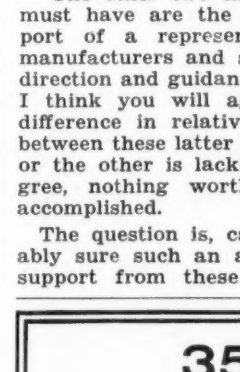
Campbell to Head Besche Refrigeration Sales

BALTIMORE — William Campbell has been appointed manager of refrigerator activities for Besche Bros., refrigerator, radio, and furniture store here. Besche Bros. handle Frigidaire, Crosley, Norge, and Grunow lines.

35
Manufacturers of Household and Commercial Units Now Use
Artic
REG. U. S. PAT. OFF.
(DU PONT METHYL CHLORIDE)

ARTIC is backed by 15 years of usage in the industry. Its favorable refrigeration properties permit the design and construction of light-weight, compact units. Its stability and purity contribute to efficient, trouble-free operation.

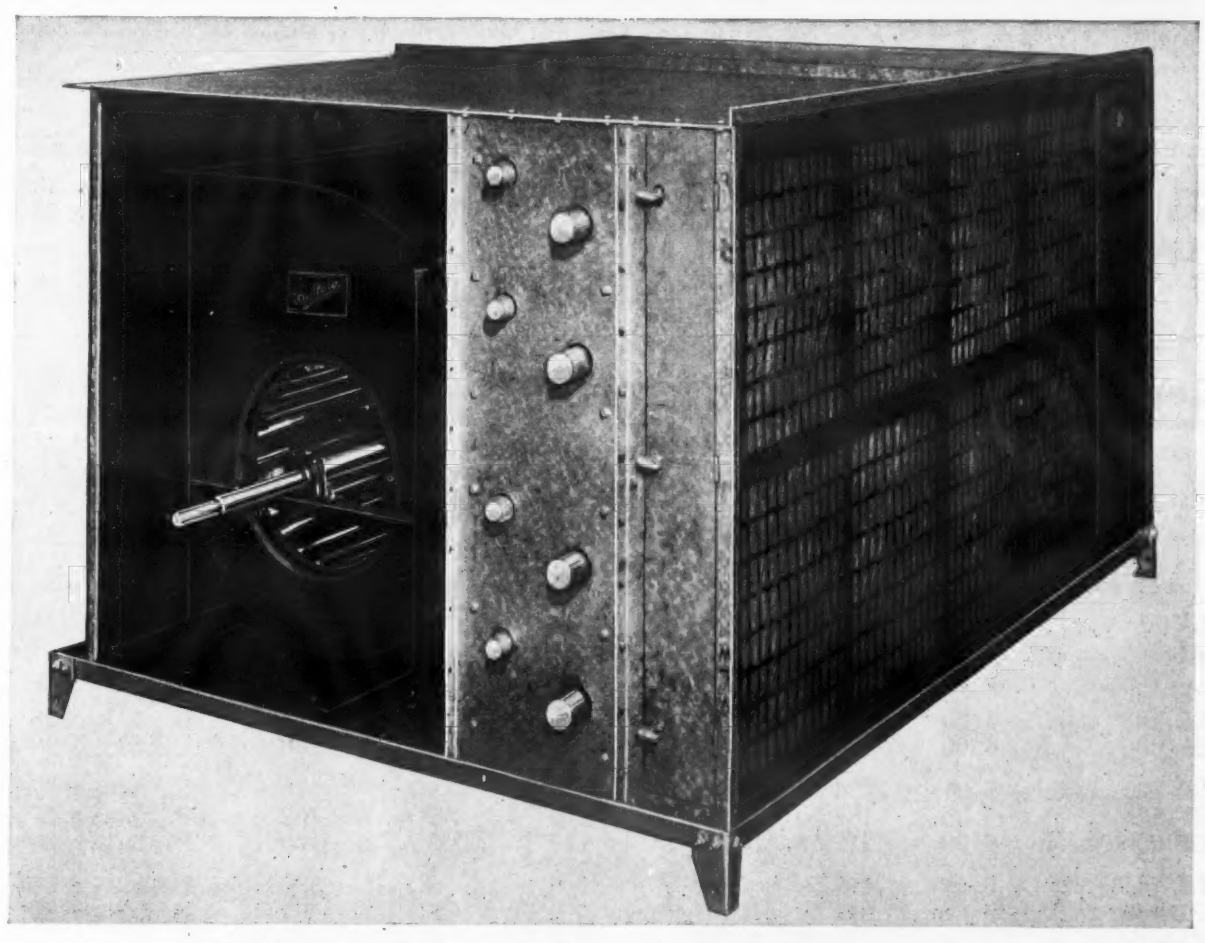
The use of ARTIC in a well-designed and well-constructed machine gives a unit that users can rely on for dependable, automatic performance. That is why so many machine manufacturers select ARTIC.



SEND FOR TECHNICAL BOOK
Contains complete information on ARTIC's favorable physical and thermodynamic properties. 56 pages.

DU PONT

E. I. du Pont de Nemours & Co., Inc.
The R. & H. Chemicals Dept.
Wilmington, Del.
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco



"PC" Cabinet for 24 Ton Cooling Installation—Note Few Coil Connections Necessary

Three-Day Shipment on all standard sizes

We are stocking two standardized "PC" Cabinet arrangements:
(a) Fans, Cooling Coil and Filter.
(b) Fans, Cooling Coil, Filter and space for additional coils (either heating or cooling).

We can also make six- to ten-day shipment on other arrangements, including motors, drives and humidifiers.

We do no installing. Contractors like our "PC" cabinets because the units are practical, — conservatively rated, easy-to-install. They live up-to-expectations, and satisfy the customer.

Write for Bulletin 2968.

BUFFALO FORGE COMPANY, 487 Broadway, Buffalo, N.Y.

"Buffalo" Type "PC" Central Cabinets for Comfort Conditioning

Atwater Kent

Atwater Kent Mfg. Co., Philadelphia, Pa.

Cabinet—Rex 1-door cabinet, wood frame, composition material for breaker strip, rubber gasket. Balsam wool insulation in model R-334, 2 in. throughout; model R-615, 2½ in.; other models, 3 in. Chromium-plated hardware.

Compressor—Open-type reciprocating 1-cylinder Atwater-Kent compressor with 1½-in. bore and 1¼-in. stroke with compressor speed of 430 r.p.m. with belt drive. Compressor below food compartment. Diaphragm shaft seal. Refrigerant charge—1 lb. Lubrication—5 oz. Water White lubricant.

Control— Ranco temperature control. Adjustable by user to desired temperature. Semi-automatic defrosting on all but model R-334 which is wide cycle. No vacation setting; 12 temperature selections.

Evaporator—Mullins stamped evaporator, porcelain exterior. Thermostatic control. Detroit Lubricator thermostatic expansion valve. Ice trays of anodically treated aluminum and rubber. Ice tray release.

Motor—G-E capacitor motor. Oil every six months.

Condenser—Bush fan-cooled continuous tube—finned.

Guarantee—System and cabinet 1 year. Serviced by dealers only.

Special features—Food rack on door; torque belt tightener on models R-256 and R-547; interior light all models but R-334.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
R-334	4.32	$.....	120	1/6	CH_3Cl	210	* 53¼ x 23⅞ x 22¼	P 26½ x 19½ x 16	8.5	3	2	63	4.5
R-615	5.16	.....	120	1/6	CH_3Cl	270	* 56 x 26¾ x 24	P 27¾ x 20¼ x 16½	11.03	5	3	84	6
R-256	6.15	.....	120	1/6	CH_3Cl	304	* 58½ x 29¾ x 24½	P 30¼ x 22½ x 16½	13.04	5	3	112	8
R-547	7.13	.....	120	1/6	CH_3Cl	328	* 59⅞ x 32 x 24½	P 31½ x 24¾ x 16½	14.31	5	3	112	8

*Porceloid finish.

Crosley

Crosley Radio Corp., Cincinnati, Ohio.

Cabinet—Truscon 1-door cabinet, wood frame, wood breaker strip, and rubber gasket. Thermocraft and Balsam Wool insulation. Thickness in FR-20 and FR-30: top 2 in., sides 2-1/16 in., bottom 2⅜ in., bottom 2¾ in., sides and back 2⅞ in., back 1⅞ in., door 1⅜ in.; FA-40: top and door 1⅝ in.; FA-50 and PFA-50: top 2¾ in., sides and back 3⅜ in., bottom 3⅝ in., door 1⅝ in.; FA-60 and PFA-60: top 2¾ in., sides and back 3½ in., bottom 3¼ in., door 1⅞ in.; FA-70 and PFA-70: top 2¾ in., sides, bottom, and back 3½ in., door 2 in.; F-43 and P-43: top and bottom 2¾ in., sides and back 2⅞ in., door 1⅝ in.; F-55 and PF-55: top 2¾ in., sides, bottom, and back 3¼ in., door 1⅞ in.; F-70 and P-70: top, 2¾ in., sides, bottom, and back 3½ in., door 2 in. Stamped brass chromium-plated hardware.

Compressor—Models FR-20 and FR-30 rotary type driven at 1,700 r.p.m. All others semi-hermetically sealed, reciprocating compressors which can be opened for service, 535 r.p.m., except models F-70 and P-70, 600 r.p.m. One-cylinder, with 1½ in. bore, 1⅜ in. stroke. Rotary compressor—direct drive. Reciprocating—belt drive.

Control—Tagliabue manual temperature control with defrosting position.

Condenser—Crosley fan-cooled, fin-tube condenser.

Motor—Delco capacitor-start.

Evaporator—Crosley stamped steel evaporator. Copper ice tray shelf. Capillary tube refrigerant control.

Guarantee—Cabinet and system 1 year.

Special Features—Shelvador in all models. Interior light in all but FR-20 and FR-30. Shelvatray, Shelvabasket, Storabin, and ventilated front on F and PF models.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
FR-20	2.0	$ 79.50	...	1/6	Thermon*	175	L 36 x 23⅝ x 25	P	5.2	2	2	42	2.6
FR-30	3.02	94.50	...	1/6	Thermon*	195	L 36 x 23⅝ x 25	P	7.0	3	2	42	2.6
FA-40	4.09	112.50	100	1/6	SO_2	266	L 52¾ x 23½ x 25½	P	8.6	3	2	42	2.6
FA-50	5.00	129.50	100	1/6	SO_2	278	L 56¼ x 25⅞ x 24½	P	11.3	3	3	42	2.6
PFA-50 ...	5.00	152.00	100	1/6	SO_2	292	P 56¼ x 25⅞ x 24½	P	11.3	3	3	42	2.6
FA-60	6.00	149.50	100	1/6	SO_2	303	L 56¼ x 30⅜ x 25⅜	P	13.5	4	4	63	3.9
PFA-60 ...	6.00	174.50	100	1/6	SO_2	321	P 56¼ x 30⅜ x 25⅜	P	13.5	4	4	63	3.9
FA-70	7.08	169.50	100	1/6	SO_2	337	L 57½ x 32¾ x 25⅞	P	14.9	4	5	84	5.2
PFA-70	7.08	194.50	100	1/6	SO_2	359	P 57½ x 32¾ x 25⅞	P	14.9	4	5	84	5.2
F-43	4.30	139.50	100	1/6	SO_2	284	L 56½ x 23⅞ x 23½	P	9.15	4	3	42	2.6
PF-43	4.30	159.50	100	1/6	SO_2	303	P 56½ x 23⅞ x 23½	P	9.15	4	3	42	2.6
F-55	5.51	164.50	100	1/6	SO_2	330	L 57⅛ x 29 x 24⅞	P	11.6	4	4	63	3.9
PF-55	5.51	187.00	100	1/6	SO_2	344	P 57⅛ x 29 x 24⅞	P	11.6	4	4	63	3.9
F-70	7.08	189.50	110	1/5	SO_2	375	L 58⅞ x 32¾ x 25⅞	P	14.9	4	5	84	5.2
PF-70	7.08	219.50	110	1/5	SO_2	392	P 58⅞ x 32¾ x 25⅞	P	14.9	4	5	84	5.2

*Dichloromonofluoromethane.

Fairbanks-Morse

Fairbanks-Morse Home Appliances, Inc. Chicago, Ill.

Cabinet—One-door cabinet with Conservador. Thermocraft insulation thickness in model B-4—top, sides, back, bottom 2 in., door 3 in.; B-5—top and door 3 in., sides, back, and bottom 2½ in.; B-6—top 2¾ in., sides, back, bottom, and door 3 in.; B-8—top and sides 3¼ in., back and bottom 3½ in., door 3 in. Semi-concealed chromium-plated hardware.

Compressor—One-cylinder, belt-driven, reciprocating compressor with 1½ in. bore and 1-7/16 in. stroke, driven at 500 r.p.m., except for model B-8 which has two cylinders and is driven at 350 r.p.m. Mounted under food compartment.

Control—Manual temperature control with defrost and vacation cycle motor.

Motor—Capacitor motor. Oil semi-annually.

Condenser—Fan-cooled fin tube.

Special Features—Conservador on all models. Electric light all except B-4.

Evaporator—Brass and copper, tubular type. Expansion valve refrigerant control.

Guarantee—Cabinet and system 1 year.

MODEL NO.	CU. FT.	INSTALLED *PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
B-4	4.14	$139.50	115	1/6	SO_2	265	D 50½ x 23¼ x 21¾	P 24½ x 18¾ x 17⅛	9.25	..	2	42	5
B-5	5.11	169.50	115	1/6	SO_2	278	D 55½ x 25⅝ x 22⅝	P 29⅛ x 19¾ x 17⅛	10.55	..	3	63	7½
B-6	6.01	199.50	115	1/6	SO_2	323	D 55½ x 28⅞ x 23⅛	P 29⅞ x 22 x 17⅛	12.55	..	3	63	7½
B-8	8.01	269.50	160	1/5	SO_2	356	D 58½ x 34 x 23⅝	P 32⅜ x 26⅝ x 17⅛	15.76	..	4	84	10

*New York retail price.

Leonard

Leonard Refrigerator Co., Detroit, Mich.

Cabinet—Leonard 1-door cabinet on all but model PD-1059 which has 2 doors. Wood frame, composition breaker strip, rubber gasket. Thickness of insulation—models LA and SL-435 back, door, and bottom 2½ in., sides and top 2 in.; model L-300 sides and back 2¾ in., door, top, and bottom 2½ in.; models PD-896 and PD-1059, 3 in. throughout; all other models 2½ in. throughout. Chromium-plated hardware.

Compressor—Leonard open-type reciprocating compressor. 1-cylinder on models L-300, LA, SL-435, SL-525, SP-525, and LD-553; all others 2-cylinder. 1¼-in. bore, 1½-in. stroke. Belt drive. Compressor speed 525 r.p.m. for all 1-cylinder models; 410 r.p.m. for all 2-cylinder models except models PD-896 and PD-1059, which are driven at 525 r.p.m. and 640 r.p.m., respectively. Bellows shaft seal. Compressor below food compartment. Refrigerant charge—2 lbs. 6 oz. to 3 lbs. 4 oz. Special refrigeration oil lubrication—1 lb. to 1 lb. 10 oz.

Control—Ranco automatic temperature control with semi-automatic defrosting.

Motor—Delco condenser start and capacitor transformer. Oil annually.

Evaporator—Leonard welded-shell steel evaporator. High side float refrigerant control. Aluminum and rubber ice cube trays.

Condenser—Leonard fan-cooled continuous fin tube condenser.

Guarantee—System and cabinet, 1 year. Serviced by dealers only.

Special Features—Interior electric light, vegetable crisper, convenience basket, ice tray lifter, easy cube ice tray, Len-A-dor, sliding shelf, hinged shelf, cold chest.

MODEL NO.	CU. FT.	INSTALLED PRICE	*I.M.E. B.T.U.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
L-300	3.10	$ 99.50	680	1/6	SO_2	285	L 48¾ x 24⅜ x 20½	P 23½ x 18⅜ x 13½	7.91	4½	2	42	4½
LA	4.25	119.50	680	1/6	SO_2	312	L 47⅞ x 24⅜ x 24⅛	P 24⅛ x 19¾ x 17	8.34	3½	2	42	4½
SL-435	4.35	134.50	680	1/6	SO_2	328	L 51⅜ x 25⅛ x 24⅝	P 24⅛ x 19¾ x 17	8.34	3½	2	42	4½
SL-525	5.25	158.50	680†	1/6	SO_2	373	L 52⅞ x 28½ x 26	P 24⅝ x 22⅛ x 17¾	10.05	3½	3	63	6¾
SL-600	6.00	187.50	1030‡	1/6	SO_2	400	L 55¼ x 28½ x 26	P 27 x 22⅛ x 18⅝	12.89	4½	4	83	9
SL-721	7.21	224.50	1030‡	1/6	SO_2	438	L 57⅛ x 31¾ x 26	P 28⅛ x 25¼ x 18⅝	14.73	4½	4	83	9
SP-525	5.25	184.50	680†	1/6	SO_2	402	P 52⅞ x 28½ x 26	P 24⅝ x 22⅛ x 17¾	10.05	3½	3	63	6¾
SP-600	6.00	217.50	1030‡	1/6	SO_2	408	P 55¼ x 28½ x 26	P 27 x 22⅛ x 18⅝	12.89	4½	4	83	9
LD-553	5.53	197.50	680†	1/6	SO_2	387	L 52¾ x 28½ x 25⅝	P 24⅝ x 22⅛ x 18⅝	10.45	3	3	62	6¾
PD-588	5.88	247.50	1030‡	1/6	SO_2	431	P 55¼ x 28½ x 25⅝	P 27 x 22⅛ x 18⅝	13.67	5	3	81	10½
PD-704	7.04	279.50	1030‡	1/6	SO_2	469	P 57⅛ x 31¾ x 25⅝	P 28⅛ x 25¼ x 18⅝	16.14	5	4	108	14
PD-896	8.96	334.50	1300	1/4	SO_2	534	P 64⅛ x 32¾ x 26⅛	P 35⅛ x 25¼ x 18⅝	19.45	6	4	108	14
PD-1059 ...	10.59	389.50	1550	1/4	SO_2	680	P 64⅛ x 40⅜ x 26⅛	P 34½ x 32⅝ x 18	21.88	6	5	108	20

*Compressor capacity given in B.t.u.'s per hour with 90° F. ambient temperature, 20° F. saturated suction temperature, and refrigerant vapor temperature entering the compressor 65° F. †Two-cylinder units with capacity of 1030 B.t.u.'s per hour, used in south and southwest. ‡Two-cylinder unit with capacity of 1300 B.t.u.'s per hour, used in south and southwest.

Norge

Norge Corp., Detroit, Mich.

Cabinet—Norge 1-door cabinet for all except models P-953 and P-1117. Wood frame, wood breaker strip, rubber gasket. Norge approved insulation. Chromium-plated hardware.

Compressor—Norge open-type rotary compressor. Belt-driven. Bellows shaft seal. Compressor below food compartment.

Control—Manual temperature control, with manual defrosting.

Motor—Capacitor-type motor.

Condenser—Fan-cooled fin tube condenser.

Evaporator—Norge shell and tube copper and brass evaporator, low side float refrigerant control. Aluminum and rubber ice cube trays.

Guarantee—Cabinet and system, 1 year. Serviced by dealers only.

Special Features—Defrosting tray. All models except T-20, electric light; L and P models, 621, 720, and 804, adjustable shelves; sliding bottle rack, L and P models 425, 519, 621, 720, and 804. Accessory set of six dishes for models E-425 and all L and P models.

MODEL NO.	CU. FT.	INSTALLED *PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: P—PORCELAIN, N—NORGLOSS EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
T-20	2.0	$ 79.95	...	1/6	SO_2	200	†N 36 x 22¾ x 21	P 15¾ x 19¼ x 15⅛	5.25	2	2	36	2¾
S-310	3.10	109.50	...	1/6	SO_2	219	†N 35¾ x 24 x 23⅛	P 17¼ x 20½ x 17½	7.00	2	2	42	4½
E-310	3.10	99.50	...	1/6	SO_2	218	N 44¾ x 24 x 23⅛	P 17¼ x 20½ x 17½	7.00	2	2	42	4½
E-425	4.25	119.50	...	1/6	SO_2	232	N 51¾ x 24 x 23⅜	P 25⅜ x 19½ x 16¼	8.49	3	2	42	4½
P-425	4.25	154.50	...	1/6	SO_2	276	P 52⅛ x 25⅝ x 22⅞	P 25⅜ x 19½ x 16¼	8.49	3	2	48	4⅝
L-425	4.25	134.50	...	1/6	SO_2	268	N 52⅛ x 25⅝ x 22⅞	P 25⅜ x 19½ x 16¼	8.49	3	2	48	4⅝
P-519	5.19	174.50	...	1/6	SO_2	303	P 54¾ x 26⅞ x 25¼	P 27⅜ x 21 x 17	10.03	3	3	72	7¼
L-519	5.19	149.50	...	1/6	SO_2	288	N 54¾ x 26⅞ x 25¼	P 27⅜ x 21 x 17	10.03	3	3	72	7¼
P-621	6.21	213.50	...	1/5	SO_2	340	P 58¾ x 28½ x 25¼	P 31⅝ x 21⅞ x 16¾	12.63	5	3	96	9¾
L-621	6.21	183.50	...	1/5	SO_2	328	N 58¾ x 28½ x 25¼	P 31⅝ x 21⅞ x 16¾	12.63	5	3	96	9¾
P-720	7.20	249.50	...	1/5	SO_2	352	P 58¾ x 31½ x 25¼	P 31⅛ x 24⅞ x 17¼	14.15	5	3	96	9¾
L-720	7.20	214.50	...	1/5	SO_2	343	N 58¾ x 31½ x 25¼	P 31⅛ x 24⅞ x 17¼	14.15	5	3	96	9¾
P-804	8.04	289.50	...	1/4	SO_2	395	P 60¾ x 32½ x 27¼	P 32½ x 25 x 18¼	15.59	5	4	120	12⅜
L-804	8.04	254.50	..	1/4	SO_2	372	N 60¾ x 32½ x 27¼	P 32½ x 25 x 18¼	15.59	5	4	120	12⅜
P-953	9.53	319.50	...	1/4	SO_2	470	P 60¾ x 40⅞ x 27¼	P 31½ x 33 x 17¼	19.51	6	4	120	12⅜
P-1117	11.17	369.50	...	1/4	SO_2	541	P 60¾ x 48⅝ x 27¼	P 31½ x 40¾ x 17¼	23.11	6	7	192	20¼

*Suggested zone 1 installed price. † Porcelain top.

San Antonio Dealers Report 466 Sales at Annual Spring Show

SAN ANTONIO, Tex.—Sales made during the Spring Refrigeration Show held here recently under the joint sponsorship of the San Antonio Public Service Co. and 10 refrigerator distributors totalled 424 electric refrigerators and 42 gas refrigerators. The sales were made by 105 salesmen employed by 25 local dealers.

Two new features of the campaign this year were the registration certificate and the $300 cash prize contest. The distributor was supplied with a number of envelopes in which were two enclosures, the registration certificate and the prize coupon. A customer was required to register at the show in order to be eligible for the prizes.

With regard to the cash prize contest, the purchaser was entitled to participate. Prize money was divided into 17 prizes, ranging from $5 up to $50. A judging committee judged all eligible entries and selected the 17 winners.

Penn-New Jersey Group Told About Jubilee

PHILADELPHIA — Associated Gas & Electric System's "Refrigeration Jubilee" plans were outlined to dealers in the Pennsylvania-New Jersey group at a series of dinner meetings held throughout the Penn-Jersey territory following the opening of the Jubilee drive May 13.

Dealer attendance numbered approximately 300 at each of the four meetings, which were held in Dover, N. J., and Easton, Reading, and Hanover, Pa. Brief skits were used to stress the buying motives of people who will buy electric refrigerators this year.

F. S. Hoefer, general domestic sales manager for the Penn-Jersey group, outlined to each dealer meeting the principle objectives of the Jubilee program, and Frank W. Lovejoy, vice president in charge of sales for Socony Vacuum Oil Co. of New York, presented an inspirational selling talk.

Penn-Jersey's quota for the two-month Jubilee period is 5,000 electric refrigerators. Leaders, however, are driving for 200 per cent of quota by the time the campaign closes June 29.

Yams, Molasses & Cash Taken in Payment

CORINTH, Miss. — Two hundred bushels of sweet potatoes, 200 gallons of molasses, and $157 in cash were taken as payment for a Westinghouse DLF-78 electric refrigerator and a Westinghouse range by Terry A. Barnes, salesman for the Robert Heyer Motor Co., Westinghouse distributor for this territory. A cow and a calf were also part of the bargain.

The appliances were sold to William Settle of Biggersville, Miss., a farmer living in the territory recently opened for electrification by the TVA. The farmer wanted to electrify his kitchen, did not have the total amount of cash but did have potatoes and molasses. The salesman has disposed of the "stock in trade" at a profit.

Jordan Piano Co. Made Crosley Dealer

WASHINGTON, D. C.—Arthur Jordan Piano Co. here, was recently appointed dealer for Crosley Shelvador electric refrigerators, reports C. Camp, Washington representative of the Lincoln Sales Corp., Crosley distributor at Baltimore.

Utilities Propose Cut In New York City Electric Rates

NEW YORK CITY—Proposals for reductions in electric rates in New York City, amounting to $7,566,500 a year, to become effective as soon as approved, were filed with the Public Service Commission last week by the six electric companies affiliated with the Consolidated Gas Co. group.

With reductions already made in Westchester county, and reductions to the city and federal governments, the proposed cuts make a total reduction of $10,578,500 a year.

All classes of users will be affected by the reductions. Bills of 88.5 per cent of the residential customers will be decreased; none will be increased, and only 11.5 per cent of residential bills will remain unchanged.

This will mean a decrease in approximately 17,600,000 monthly bills a year.

The new rates all are sharply promotional, allowing larger reductions on larger blocks of usage.

Reductions are proposed, subject to approval by the Public Service Commission of a consolidation of the New York Edison Co. and the United Electric Light & Power Co. in the interest of economy, and on condition that the new rates for retail, commercial, general, and wholesale uses may not be available to those customers who purchase electricity for submetering and resale.

Existing wholesale classifications and rates of the companies will be continued in effect for customers engaged in submetering, pending decision by the Commission on abolition of the resale of electricity.

Comparison of present and proposed rates for residential users, including religious institutions, follows:

First 10 kwh. or less is set at $1 per meter per month under both the present and proposed schedules. But where the present rate allows 6 cents per kwh. for the next five hours, and 5 cents per kwh. for all over 15 hours, the proposed schedule drops that rate to 5 cents for the first 35 kwh., to 4 cents for the next 40 kwh., and 3 cents for the next 40, and to 2 cents for all over 125 kwh.

Reductions in bills for large residential use would go as high as 48 per cent under the new rates.

Present and proposed rates for retail, commercial, general, and wholesale uses by those not engaged in the submetering and resale, are:

Monthly energy charge, under present rates, if $1 per month for 10 kwh. or less, 6 cents per kwh. for the next 40 kwh., 5 cents per hour for the next 4,950 kwh., and 4 cents per kwh. for all over 5,000 hours.

Under the proposed rates, the $1 for the first kwh. would hold. For the next 70 kwh., the rate would be 5.5 cents per kwh.; for the next 720, 5 cents; for the next 5,200, 4 cents; for the next 14,000, 2.5 cents; for the next 30,000, 1.5 cents; for the next 100,000 1 cent; and for all over 150,000 kwh., 0.7 cents per kwh.

Monthly demand charge, under the present rates, is $1 per month per kilowatt of maximum demand, where the demand exceeds one kilowatt.

Proposed rates include the first three kilowatts per month of maximum demand in the energy charge. The next 997 kilowatts are charged at $2.50 per kilowatt, and all over 1,000 kilowatts per month at $2 per kilowatt.

Under the rate reductions made for those in the retail, commercial, general, and wholesale classifications, approximately 89 per cent of the bills will be reduced, 9.5 per cent will be unchanged, and 1.5 per cent will be increased, due to revision of the demand charge along with the decrease in the energy rate.

Amounts and percentages of reductions in the electric bills of residential users of electricity in the New York City area are shown in the following table:

Monthly Kwh.	Bill at Present Rates	Bill at New Rates	Percent of Reduction
0-10	$ 1.00	$ 1.00	
15	1.30	1.25	3.85
25	1.80	1.75	2.78
35	2.30	2.25	2.17
50	3.05	2.95	3.28
60	3.55	3.35	5.63
70	4.05	3.75	7.41
90	5.05	4.50	10.89
100	5.55	4.80	13.51
150	8.05	6.05	24.84
200	10.55	7.05	33.18
300	15.55	9.05	41.80
500	25.55	13.05	48.92

Court Order Stops City From Appliance Selling

BARTOW, Fla.—A temporary order restraining the City of Bartow from continuing its practice of selling electrical appliances was granted May 25 by Judge H. C. Petteway.

Harold Burright, proprietor of the Bartow Electric Co., who sought the injunction, claimed that the city was ruining his business with its sales set-up, which included advertising the appliances; using employees as salesmen; using city funds to finance an electric shop to retail appliances; using city revenues to finance a cooking school; and entering into contracts with a finance company.

Appliances, Inc., Cleveland, To Distribute F-M Line

CLEVELAND — Appliances, Inc., distributor of Fairbanks-Morse refrigerators and other electrical appliances, recently doubled its office space in the Terminal Buildings here, reports W. H. Hayward, manager.

G-E Distributor Holds Own Training School For Salesmen

KANSAS CITY—When a specialty appliance salesman of Midwest Electric Appliances, Inc., G-E distributor here, extolls the merits and performances of the refrigerator, range, dishwasher, and other G-E appliances, his information is based on actual practical experience, rather than just theoretical knowledge.

This distributor's sales meeting room has been recently remodeled and demonstration facilities for the entire line of household and commercial appliances are provided.

In the complete G-E kitchen installed at one end of the room, members of the retail selling organization are trained in the proper use of the range, dishwasher, and refrigerator. The men, in groups of eight, are taken through four lessons.

H. C. Doss, Midwest's sales promotion manager, says of the plan: "We hold a district manager's meeting each week, and one of the district managers prepares luncheon."

Besides the G-E kitchen, there is also a laundry training room. Here, groups of eight men go through a four-hour course in washing, drying, and ironing their clothes.

Another unusual feature included in the sales room since its remodeling, is the "closing room." Equipped with modern office furniture, this room has also an X-5 cabinet with sheet rubber sealed over it to demonstrate the air-tight construction of the G-E refrigerator, glass-enclosed demonstrating unit, a folio containing testimonial letters, pictures of G-E installations, names of prominent owners of G-E products, and charts showing the refrigerating unit, and the washer.

Stern Reports Gain In Grunow Sales

HARTFORD, Conn.—Increased business throughout its territory is being reported by Stern & Co., Inc., distributor of Grunow electric refrigerators here, according to F. E. Stern, president. Despite unusually cold weather throughout the spring, sales all over the territory have run considerably ahead of last year, Mr. Stern reports.

Stern has recently added to its dealer list the Forbes & Wallace Co., of Springfield, Mass., one of the largest department stores in Western Massachusetts. McCallum department store, Northampton, Mass., is entering its third year with Grunow, with sales topping all previous records.

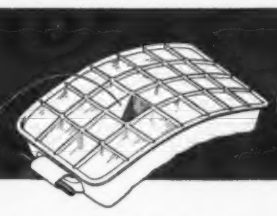
Marked increases are also reported, Mr. Stern said, by Sage-Allen Co., Hartford, and Donnelly's, Norwalk.

Hutzler Bros. Opens Refrigerator Dept.

BALTIMORE—Hutzler Brothers Co., local department store, recently opened a new refrigerator department in its downtown store. The company has another refrigeration department on the fourth floor. Lines handled include Norge, Frigidaire, Westinghouse, and General Electric.

Brooklyn Dealers to Hold Picnic July 24

BROOKLYN—The 1935 annual outing and banquet for the members and guests of the Electrical Appliance Dealers Association of Brooklyn will be held on Wednesday, July 24 at the Half Moon Hotel, Coney Island, reports Martin A. Tarzian, president.

A TRAY FULL  OF TRICKS!

"COLD FACTS"
No. 6

Flexible Rubber Trays and Grids make "cold canvassing" produce "hot prospects"... INSIST that ALL models of the refrigerator you sell come factory-equipped. Write to your manufacturer or direct to us. The Inland Manufacturing Co., Dayton, Ohio.

Salesman: "You say you already have an automatic refrigerator?"
Prospect: "Yes—but I do wish I had bought one with Flexible Rubber Trays."
Salesman: "Tell you what I'll do. I'll give you a rubber tray in return for the names of 5 of your friends who do not own automatic refrigerators!"

Many Features of the Refrigerator You Sell are "Hidden Values"...But

Flexible Rubber Trays and Grids

are Obvious Advantages!

IF IT'S RUBBER—

ask Miller

MILLER'S technical staff has worked closely with every important manufacturer of refrigerators since the birth of the business. Developing special compounds for specific qualities, suggesting improvements in design, spotting possible economies, are daily routine with us. Strict professional respect for confidential data is always maintained.

If you are looking for a rubber compound that is free from odor, oil-resisting, grease-resisting, and even age-resisting — or if you have a peculiar problem in design of a rubber part — *let Miller do your worrying for you.* If we have not already a formula or a blueprint that answers the purpose, we will find one for you. No obligation. Just write to —

REFRIGERATOR PARTS DEPT.
Miller Rubber Products Co., Inc.—Akron, Ohio

Gibson

Gibson Electric Refrigerator Corp.
Greenville, Mich.

Cabinet—Gibson 1-door cabinet, wood frame, Panelyte breaker strip, rubber gasket. Gibsonite insulation. Thickness of insulation in model B-4 and BX-4—top, sides, back, and bottom 2 in.; door, 2¼ in.; model B-475, 2½ in. throughout; models L-575 and P-575—top and back, 2¾ in.; sides and bottom, 3 in.; door, 2½ in.; models L-705 and P-705—top and back, 2⅞ in.; sides and door, 3 in.; bottom, 3½ in.; models L-835 and P-835—top, 3⅜ in.; sides, 3¼ in.; back, 3⅝ in.; door, 3 in.; bottom, 4 in. Grand Rapids Brass hardware, chromium plated.

Compressor—Gibson open-type reciprocating compressor for "B" models and Gibson hermetically sealed reciprocating compressor for "L" and "P" series. All models 2 cylinders. Open-type units belt driven, sealed units direct driven. Compressor speed open type units 1,000 r.p.m., sealed units, 1,740 r.p.m. Bore 1-1/16 in., stroke, ⅝ in. Compressor below food compartment. Refrigerant charge, 28 to 56 oz. Lubrication, 16 oz. Sunoco oil.

Control—Ranco automatic temperature control, with semi-automatic defrosting.

Motor—Delco or G-E capacitor start. Oil every 6 months on open-type units.

Evaporator—Gibson plate-type shelf copper evaporator. High side float refrigerant control. Anodically aluminum ice trays. Ice tray release.

Condenser—McCord fan-cooled fin tube.

Guarantee—System and cabinet 1 year. Serviced by dealers and independent service firms.

Special Features—Twin dairy kits, Util-A-Rac, Krisperator, Veg-A-Dor, lift-out shelf, twin chilling trays, Press-toe door opener.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
B-4	4.0	$.....	...	1/8	SO_2	166	L 43⅝ x 23⅞ x 26⅝	P 19 x 19½ x 19½	5.53	1	1	21	1¼
BX-4	4.0	.....	...	1/8	SO_2	204	L 43⅝ x 23⅞ x 26⅝	P 19 x 19½ x 19½	9.84	2	3	63	5¼
B-475	4.75	.....	...	1/8	SO_2	245	L 52⅜ x 23⅞ x 27¾	P 26⅞ x 18½ x 18½	11.1	3	3	63	5¼
L-575	5.25	.....	...	1/5	SO_2	273	L 52⅞ x 25 x 26¾	P 30½ x 19 x 17⅛	10.4	3	4	126	11
P-575	5.25	.....	...	1/5	SO_2	273	P 52⅞ x 25 x 26¾	P 30½ x 19 x 17⅛	10.4	3	4	126	11
L-705	6.5	.....	...	1/5	SO_2	308	L 56 x 28⅞ x 26¾	P 33⅛ x 22⅞ x 16⅛	14.1	4	5	147	12¾
P-705	6.5	.....	...	1/5	SO_2	308	P 56 x 28⅞ x 26¾	P 33⅛ x 22⅞ x 16⅛	14.1	4	5	147	12¾
L-835	7.75	.....	...	1/5	SO_2	337	L 59½ x 30⅝ x 28¼	P 35½ x 24⅛ x 16⅞	15.5	4	5	168	15
P-835	7.75	.....	...	1/5	SO_2	337	P 59½ x 30⅝ x 28¼	P 35½ x 24⅛ x 16⅞	15.5	4	5	168	15

Grunow

General Household Utilities Co.
Chicago, Ill.

Cabinet—Grunow 1-door cabinet, steel and wood frame, Bakelite breaker strip, rubber gasket. Dry-Zero insulation. Thickness of insulation—model 50-S top, back, and door 2½ in., bottom 2 in., sides 2¼ in.; model 60-S top, back, sides, and door 2½ in., bottom 3 in.; model 51-D top, back, and sides 2 in., bottom 2½ in., door 2¼ in.; model 61-D top, back, and sides 2½ in., bottom 3 in., door 2¾ in.; model 56-SD top, bottom, back, and sides 2½ in., door 3½ in.; all others, top, bottom, back, and sides 3 in., door, 3½ in. McKinney and Winters & Crampton chromium-plated hardware.

Control—Cutler-Hammer pressure control, automatic defrosting.

Compressor—Grunow sealed rotary unit, direct driven. Refrigerant charge—1 qt. Lubrication charge—1-1/10 qts. vacuum control.

Motor—Grunow capacitor start and run motor.

Evaporator—Grunow brass evaporator, with chromium finish. Float and Carrene meter refrigerant control. Aluminum ice trays. Ice tray release.

Condenser—McCord fan-cooled radiator-type single and double-pass condenser.

Guarantee—System and cabinet, 1 year. Serviced by dealers only.

MODEL NO.	CU. FT.	INSTALLED *PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
50-S	4.8	$119.50	...	1/6	Carrene	325	† 52 x 24¾ x 24½	P	10.0	4	2	64	4.9
60-S	5.7	149.50	...	1/6	Carrene	350	† 58 x 26¼ x 24⅜	P	10.46	4	2	96	7.3
51-D	5.1	149.50	...	1/6	Carrene	345	† 53 x 24½ x 24¾	P	10.4	4	2	96	7.3
61-D	6.1	169.50	...	1/6	Carrene	410	† 57⅞ x 27⅛ x 24¾	P	13.66	5	3	128	9.8
67-D	6.7	199.50	...	1/5	Carrene	465	† 58⅜ x 29⅞ x 27	P	14.30	6	4	160	12.2
82-D	8.2	236.00	...	1/5	Carrene	495	† 62¼ x 31¾ x 27	P	15.96	6	5	192	14.6
56-SD	5.6	189.50	...	1/6	Carrene	395	† 56½ x 25 x 27	P	10.2	4	3	128	8
67-SD	6.7	237.50	...	1/5	Carrene	465	† 58⅜ x 29⅞ x 27	P	14.30	6	4	160	12.2
82-SD	8.2	275.00	...	1/5	Carrene	495	† 62¼ x 31¾ x 27	P	15.96	6	5	192	14.6

*Zone 1, plus delivery. †Deluxe baked-on enamel finish.

Potter

Potter Refrigerator Corp., Buffalo, N. Y.

Cabinet—Rex 1-door cabinet for all except model D155, which has 2 doors. Panelyte breaker strip, rubber gasket. Balsam Wool insulation in model L45 and AL55 top and bottom, 3 in., sides, 2 in.; models L65 and L75, top, 3 in., sides, 2¾ in., bottom, 4 in.; all others, top, 3 in., sides, 2¾ in., bottom, 2 in. with 2 in. for top, 4¾ in. for sides, and 5 in. for bottom of frozen storage compartment. Grand Rapids Brass cast hardware, chromium-plated.

Compressor—Universal Cooler open-type reciprocating 1-cylinder compressor, belt-driven at 430 r.p.m. Bore 1½ in., stroke 1¼ in. Bellows shaft seal. Compressor below food compartment. Refrigerant charge, model D155—1½ lbs.; others, 1 lb. Lubrication—¾-pt. Argon oil.

Control—Cutler-Hammer temperature.

Evaporator—First evaporator, continuous coil sleeve; second evaporator, continuous fin coil. Metal used, aluminum and copper. Thermostatic control. Detroit Lubricator expansion valve. Aluminum ice trays, with one rubber tray in each model.

Motor—Wagner repulsion-induction motor. Oil every 3 months.

Condenser—Long fan-cooled fin tube condenser.

Guarantee—System and cabinet, 1 year. Serviced by dealers and independent service men.

Special Features—Frozen storage compartment with capacity of ½ bushel in model D85, 4/5 bushel in model D105, and D135, and 1¼ bushels in model D155. Porcelain shelves, interior light, five-way door latch, fruit and vegetable basket.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
L-45	...	$129.00	120	1/6	CH_3Cl	330	L 52½ x 23½ x 20½	P 25¼ x 19¼ x 16½	8.3	4	3	84	6
L-55	...	169.00	120	1/6	CH_3Cl	370	L 57½ x 23½ x 20½	P 31 x 19¼ x 16½	10.5	5	3	84	6
L-65	...	226.00	120	1/6	CH_3Cl	415	L 57¾ x 29½ x 22⅜	P 29 x 24 x 17	12.4	5	3	84	6
L-75	...	269.00	120	1/6	CH_3Cl	430	L 63¼ x 29½ x 22⅜	P 34½ x 24 x 17	14.5	6	4	112	8
D-85	...	242.00	120	1/6	CH_3Cl	420	P 57¾ x 23½ x 22⅜	P* 16¾ x 18 x 16⅛	7.2	5	2	56	4
D-105	...	299.00	120	1/6	CH_3Cl	470	P 57¾ x 29½ x 22⅜	P* 16¾ x 24 x 16⅛	10.3	5	3	84	6
D-135	...	342.00	120	1/6	CH_3Cl	510	P 63¼ x 29½ x 22⅜	P* 22¼ x 24 x 16⅛	13.0	6	3	84	6
D-155	...	426.00	166	1/4	CH_3Cl	560	P 65½ x 33½ x 22⅜	P* 22¼ x 28 x 16⅛	15.0	6	4	112	8

*Size of general storage compartment. Frozen storage compartment dimensions: model D-85—9x14x15⅛; model D-105 and D-135—9x20x15⅛; model D-155—10½x24x15⅛.

Stewart-Warner

Stewart-Warner Corp., Chicago, Ill.

Cabinet—Rex 1-door cabinet, steel frame, Tylac breaker strip, rubber gasket. Balsam Fibre insulation. Thickness of insulation: models 0455 and 0505—top 2½ in., sides and back 2 in., door 2⅞ in., bottom 2⅝ in.; model 0605—top 3 in., sides 2½ in., back 2¼ in., door 3 in., bottom 2⅝ in.; model 0465—top, sides, and back 2 in., door 2¾ in., bottom 2½ in.; models 0555 and 0574—top 3 in., sides 2½ in., back 2⅛ in., door 3 in., bottom 3½ in.; model 0705 and 0724—top, sides, and back 3½ in., door and bottom 3½ in. Winters & Crampton hardware. Models 0455, 0505, and 0605 hardware finish stainless steel, natural buff; all others, cast white brass, chromium finish.

Compressor—Stewart-Warner open-type reciprocating compressor. Models 0455, 0505, and 0605—1 cylinder; others—2 cylinders. Belt drive. Compressor speed—0455, 0505, and 0605, 450 r.p.m.; all others, 375 r.p.m. Bore, 1½ in.; stroke, 1-7/16 in. Fulton sylphon shaft seal. Compressor located below. Refrigerant charge—model 0455, 4 lbs.; models 0505 and 0605, 4½ lbs.; models 0465, 0555, 0705, 0574, and 0724, 5 lbs. Lubrication white oil. Charge, models 0455, 0505, and 0605—14 oz.; models 0465, 0555, 0705, 0574, and 0724—22 oz.

Control—Penn automatic temperature control. Manual defrosting on models 0455, 0505, and 0605; all others, wide cycle defrosting.

Condenser—Bush and McCord fan-cooled fin tube condenser.

Motor—G-E capacitor start motor. Oil yearly.

Evaporator—Mullins pressed steel shell evaporator, porcelain finish. Low side float refrigerant control. Anodically treated aluminum ice trays.

Guarantee—System and cabinet 1 year. Serviced by dealers.

Special Features—Electric lights in all but 4½-cu. ft. model; deluxe accessory kits consisting of drawer type hydrator, drawer type combination food and egg basket, plus three covered dishes.

MODEL NO.	CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
0455	4.6	$129.50	93	1/6	SO_2	302	* 52¾ x 23¼ x 24⅛	P 27⅜ x 19 x 16¾	9.3	3	2	56	4¼
0505	5.0	149.50	93	1/6	SO_2	321	* 54¾ x 23¼ x 24⅛	P 29⅜ x 19 x 17	10.0	3½	3	84	6⅜
0605	6.0	169.50	93	1/6	SO_2	359	* 57¼ x 25¾ x 24⅝	P 32½ x 20½ x 16⅞	11.3	3½	3	84	6⅜
0465	4.6	139.50	155	1/5	SO_2	335	* 52¾ x 23¼ x 24¾	P 27⅜ x 19 x 16¾	9.3	3	2	56	4¼
0555	5.6	169.50	155	1/5	SO_2	390	* 58¼ x 25¾ x 25¼	P 30⅞ x 20½ x 16⅞	10.5	3	3	84	6⅜
0705	7.1	194.50	155	1/5	SO_2	441	* 59¼ x 30 x 27	P 31⅜ x 23¾ x 17½	13.4	3½	3	84	6⅜
0574	5.6	189.50	155	1/5	SO_2	447	P 58¼ x 25¾ x 25¼	P 30⅞ x 20½ x 16⅞	10.5	3	3	56	6⅜
0724	7.1	219.50	155	1/5	SO_2	503	P 59¼ x 30 x 27	P 31⅜ x 23¾ x 17½	13.4	3½	3	84	6⅜

*Porceloid lacquer.

Westinghouse

Westinghouse Electric & Mfg. Co.
Refrigeration Div., Mansfield, Ohio.

Cabinet—Westinghouse cabinet, 1 door on all but model AP-200, which has four. Steel frame, Micarta breaker strip, rubber gasket. Balsam Wool insulation 3 in. thick throughout on all models except D42 where thickness in top is 3 in., sides 2¾ in., door 3 in., back and bottom 2½ in.; models DL44 and DP44 where thickness is top, back, door, and bottom, 3 in., sides 2¾ in.; models DLX95 and DPX95 where thickness is top, door, and bottom 3 in., sides and back 3½ in.; model DC20 where thickness is sides and door 2 in., bottom 2½ in.; model AP200 where thickness is top and back 4 in., sides 4¼ in., door 3½ in., bottom 3¾ in. Chrome-finished hardware.

Compressor—Westinghouse sealed reciprocating compressor. All models 1-cylinder except model AP200, which has 2 cylinders. 1-in. bore, ⅞-in stroke. Direct driven with compressor speed 1740 r.p.m. Compressor above food compartment. Refrigerant charge—2½ to 3 lbs.

Motor—Westinghouse split-phase motor.

Guarantee—System 1 year, with 4 years additional warranty on hermetic mechanism; cabinet, 1 year. Serviced by dealers only.

Evaporator—Westinghouse welded tubeless Sanalloy evaporator. High side float control. Aluminum trays, one Eject-o-cube tray in all DLX and DPX models.

Control—Westinghouse automatic temperature control, semi-automatic defrost.

Condenser—Westinghouse fan-cooled condensers.

Special Features—Ice tray release and bottle opener all models except D42. Revolving shelf, built in vegetable, fruit, and dairy compartments, and folding tray on door on all DLX and DPX models.

MODEL NO.	CU. FT.	INSTALLED *PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
D-42	4.4	$129.50	....	1/8	SO_2	265	D 55⅞ x 24¼ x 24⅞	P 29¾ x 17⅞ x 15¾	8.3	3	2	44	4½
D-54	5.4	169.50	....	1/8	SO_2	305	D 58 x 27⅜ x 25⅜	P 31¼ x 20⅝ x 15¾	10.1	3	3	80	8
D-60	6.0	†194.50	....	1/8	SO_2 or Freon	339	D 60⅞ x 28⅞ x 26⅜	P 34⅛ x 21¾ x 16½	11.7	3	6	118	12¼
DL-44	4.5	154.50	....	1/8	SO_2	311	D 56⅝ x 23¾ x 26⅛	P 29¾ x 17⅞ x 15¾	9.0	3	3	80	8
DP-44	4.4	174.50	....	1/8	SO_2	351	P 56⅝ x 24 x 26¼	P 29¾ x 17⅞ x 15¾	9.0	3	3	80	8
DL-54	5.4	189.50	....	1/8	SO_2	334	D 58⅛ x 26½ x 26⅛	P 31¼ x 20⅝ x 15¾	10.1	3	3	80	8
DP-54	5.4	224.50	....	1/8	SO_2	376	P 58⅛ x 26¾ x 26¼	P 31¼ x 20⅝ x 15¾	10.1	3	3	80	8
DL-67	6.7	†224.50	....	1/8	SO_2 or Freon	360	D 61 x 28⅛ x 26⅞	P 34⅛ x 21¾ x 16½	11.8	3	6	118	12¼
DP-67	6.7	†264.50	....	1/8	SO_2 or Freon	408	P 61 x 28⅜ x 27⅛	P 34⅛ x 21¾ x 16¼	11.8	3	6	118	12¼
DL-78	7.8	†254.50	....	1/8	SO_2 or Freon	394	D 61⅜ x 31⅜ x 26⅞	P 34½ x 25 x 16½	13.2	3	6	118	12¼
DP-78	7.8	†294.50	....	1/8	SO_2 or Freon	443	P 61⅜ x 31⅝ x 27⅛	P 34½ x 25 x 16½	13.2	3	6	118	12¼
DLX-67 ...	6.7	†269.50	....	1/8	SO_2 or Freon	385	D 61 x 28⅛ x 26⅞	P 34⅛ x 21¾ x 16½	11.0	3	5	116	11¾
DPX-67 ...	6.7	†309.50	....	1/8	SO_2 or Freon	430	P 61 x 28⅜ x 27	P 34⅛ x 21¾ x 16½	11.0	3	5	116	11¾
DLX-78 ...	7.8	†289.50	....	1/8	SO_2 or Freon	415	D 61⅜ x 31⅜ x 26⅞	P 34½ x 25 x 16½	12.3	3	5	116	11¾
DPX-78 ...	7.8	†334.50	....	1/8	SO_2 or Freon	465	P 61⅜ x 31⅝ x 27	P 34½ x 25 x 16½	12.3	3	5	116	11¾
DLX-95 ...	9.5	319.50	....	1/6	Freon	460	D 66⅜ x 33 x 28	P 38½ x 25⅝ x 17⅝	15.8	4	5	116	11¾
DPX-95 ...	9.5	369.50	....	1/6	Freon	520	P 66⅜ x 33¼ x 28⅛	P 38½ x 25⅝ x 17⅝	15.8	4	5	116	11¾
DC-20	2.1	86.50	....	1/8	SO_2	183	D 36 x 22⅛ x 22¾	P 13¾ x 17⅞ x 15⅝	2.7	.	1	22	2¼
DCP-20	2.1	89.50	....	1/8	SO_2	185	‡D 36 x 22⅛ x 32¾	P 13¾ x 17⅞ x 15⅝	2.7	.	1	22	2¼
AP-200	20.1	594.50		1/4	SO_2	760	P 76 x 51⅛ x 30¾	P 50¼ x 40¼ x 18⅜	37.7	11	7	192	21

*Eastern Zone prices, installed. †$10 higher when supplied with Freon unit. ‡Dulux body, porcelain top.

Apex

Apex Electrical Mfg. Co., Cleveland, Ohio.

Cabinet—Rex one-door cabinet, wood and steel frame, balloon-type rubber 745—top 3 in., sides, back, and bottom 2 in., door 2½ in.; all other models—top 3½ in., sides, back, and door 3 in., bottom 3⅜ in. Chrome-plated Winters & Crampton latch, and Grand Rapids Brass hinges.

Compressor—One-cylinder Apex open-type reciprocating compressor with 1⅜ in. bore and 1½ in. stroke on models 745, SSL-6, and SS-7. Compressor speed on models 745 and SSL-6—460 r.p.m.; on model SSL-7—520 r.p.m.

Two-cylinder Apex open-type reciprocating compressor with 1⅜ in. bore and 1½ in stroke on all other models. Compressor speed, 350 r.p.m. Balanced bellows shaft seal. Compressor below food compartment; 4 to 5¼ lbs. sulphur dioxide; 7 oz. Sun Oil Co. lubricant in one-cylinder compressors; 11 oz. in two cylinder.

Control—Penn automatic temperature control. Manual defrosting on models 740, 745, and 760; semi-automatic on all others.

Condenser—Long fan-cooled, fin tube condenser.

Evaporator—Mullins steel shell evaporator. Low side float refrigerant control except models 740 and 760 which are capillary tube. Rubber tray furnished with all models except 740, 745, and 760. Aluminum ice cube trays.

Motor—Apex, Delco, and G-E capacitor motors. Oil every six months.

Special Features—Electric light on S and D models; foot pedal door opener, dairy basket, and vegetable crisper on all D models.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
740	4.2	$.....	95	1/6	SO_2	...	L 52⅞ x 23¾ x 22¼	P 25⅞ x 19 x 16½	7.9	3	2	56	3½
745	4.5	.....	95	1/6	SO_2	...	L 52¼ x 24 x 23	P 26¼ x 19⅝ x 17	8.3	3	2	56	3½
760	6.0	.....	110	1/6	SO_2	...	L 57⅜ x 26½ x 23¾	P 32½ x 20½ x 16⅞	9.8	4	3	84	5¼
SSL-6	6.1	.....	95	1/6	SO_2	...	L 55¾ x 33¼ x 25⅝	P 26 x 25¼ x 18	12.4	6	3	84	5¼
SSL-7	7.1	.....	110	1/6	SO_2	...	L 60 x 33¼ x 25⅝	P 30¼ x 25¼ x 18	12.4	6	4	112	7
DTL-6	6.1	.....	135	1/5	SO_2	...	L 55¾ x 33¼ x 25⅝	P 26 x 25¼ x 18	12.4	6	3	84	5¼
DTL-7	7.1	.....	155	1/5	SO_2	...	L 60 x 33¼ x 25⅝	P 30¼ x 25¼ x 18	12.4	6	4	112	7
DTL-8	8.1	.....	155	1/5	SO_2	...	L 64¼ x 33¼ x 25⅝	P 34½ x 25¼ x 18	14.2	7	4	140	8¾

Copeland

Copeland Refrigeration Corp., Detroit.

Cabinet—Truscon 1-door cabinet, steel frame, Panelyte breaker strip, rubber gasket. Zerotex insulation. Thickness of insulation—model 505 top, sides, back, and bottom, 2 in., door, 2½ in.; model 635, top, sides, and back, 2½ in., door, 3 in., bottom, 2¾ in.; model 755 and 955, top, sides, back, and door, 3 in., bottom, 3½ in. Grand Rapids Brass chromium-plated hardware.

Compressor—Copeland open-type reciprocating 1-cylinder compressor. Bore 1½ in. on all except model 955, which has 2-in. bore. Stroke 1½ in. Belt-driven with compressor speed 360 r.p.m. for all except model 755, which has compressor speed of 400 r.p.m. Balanced bellows shaft seal. Compressor below food compartment. Refrigerant charge—1¼ lbs. Lubrication—¾-pt. Suniso oil.

Control—Penn automatic temperature control with wide cycle defrosting.

Motor—Delco or Wagner motor, with condenser start. Oil motor every 6 months.

Evaporator—Mullin steel evaporator with porcelain coated shelves. Thermostatic control. Detroit Lubricator expansion valve. Aluminum and rubber ice cube trays.

Condenser—Long fan-cooled fin tube condenser.

Guarantee—Cabinet and system, 1 year. Serviced by dealers only.

MODEL NO.	CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
505	4.5	$114.00	100	1/6	CH_3Cl	285	L 54¼ x 23¾ x 20¼	P 26¾ x 19½ x 16¼	7.6	3	3	63	6
635	5.5	170.00	100	1/6	CH_3Cl	321	L 58¼ x 26¼ x 22	P 29 x 21 x 17	11.7	4	3	84	8
755	6.6	193.00	110	1/6	CH_3Cl	368	L 60 x 30 x 23	P 30 x 23¾ x 17½	14.0	4	3	84	8
955	8.8	228.00	150	1/5	CH_3Cl	430	L 62⅝ x 32¾ x 24	P 33½ x 26½ x 18½	16.8	4	4	112	10

Hotpoint

Hotpoint Refrigeration Division,
Specialty Appliance Sales Dept.,
General Electric Co., Cleveland, Ohio

Cabinet—Hotpoint all-steel cabinet with Textolite breaker strip and moulded rubber gasket. Thickness of Thermocraft insulation in models A-4, A-5, and AP-5—top 3 in.; sides 2½ in., back 2¼ in., door 3¼ in., bottom 2¾ in.; models A-7 and AP-7—top 3 in., sides 2¾ in., back 2⅝ in., door 3¼ in., bottom 2¾ in.; models AP-12 and AP-15—top 2¼ in., sides 2¾ in., back 3⅛ in., door 3¼ in., and bottom 3 in. Polished chrome hardware.

Compressor—Open-type 2-cylinder compressor belt driven at speed of 350-450 r.p.m. Bellows shaft seal. Bore 1½ in., stroke 1⅜ in. Compressor below food compartment.

Evaporator—Hotpoint folded and welded stainless steel evaporator with Hotpoint highside float refrigerant control. Du-Flex aluminum and rubber ice cube trays.

Motor—General Electric capacitor.

Control—Hotpoint thermostat type temperature control. Adjustable by user. Has 9 freezing speed settings. Defrosting is semi-automatic, this same control setting being used as "vacation" setting.

Condenser—Hotpoint fan-cooled finned tube condenser.

Policy—One year guarantee on cabinet and system. Serviced by Hotpoint dealers and distributors only.

Special Features—Aphonic type fan, automatic belt tightener, ice trays in direct contact with refrigerated surfaces, automatic interior lights, foot pedal door opener, sliding shelves, vegetable and fruit drawers.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: P—PORCELAIN, G—GLYPTAL BAKED ENAMEL EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
A-4	4.4	$134.50	108	1/6	SO_2	320	G 52¾ x 23 x 23	P 29 x 18 x 15¼	8.6	3½	2	40	4
A-5	5.2	164.00	108	1/6	SO_2	340	G 52¾ x 26¾ x 23	P 29 x 21¾ x 15¼	10.2	3½	2	40	6
A-7	7.0	229.00	108	1/6	SO_2	415	G 56¾ x 29½ x 25⅛	P 33 x 24 x 17	13.0	3	4	84	10¼
AP-5	5.2	174.00	108	1/6	SO_2	340	* 52¾ x 26¾ x 23	P 29 x 21¾ x 15¼	10.2	3½	2	40	6
AP-7	7.0	239.00	108	1/6	SO_2	415	* 56¾ x 29½ x 25⅛	P 33 x 24 x 17	13.0	3	4	84	10¼
AP-12	12.5	470.00	139	1/3	SO_2	762	P 62½ x 39 x 28	P 37 x 33 x 19½	22.7	4	6	128	14½
AP-15	15.4	520.00	139	1/3	SO_2	862	P 62½ x 46 x 28	P 37 x 40 x 19½	31.3	4½	6	128	16½

*Top, door, and base—porcelain; sides and back—Glyptal baked enamel.

Ice-O-Matic

Williams Oil-O-Matic Heating Corp.
Bloomington, Ill.

Cabinet—Seeger and Williams 1-door cabinet, steel and wood frame, wood and Bakelite breaker strip, rubber gasket. Thermocell insulation, 3½ in. throughout on models S-354-1, S-355-1, and S-355-2; all others, 3 in. throughout. Chromium-plated hardware.

Compressor—Williams open-type reciprocating compressor. Models S-354-1 and S-355-1 one cylinder; others, two cylinders. Belt drive. Compressor speeds, models S-354-1 and S-355-1, 400 r.p.m.; all others, 300 r.p.m. Bore 1-5/16 in., stroke 1-5/16 in. Rotary shaft seal. Compressor below food compartment. Refrigerant charge—2½ lbs. Lubrication—1½ pts. Vacuum No. S1044.

Control—Penn automatic temperature control with semi-automatic defrosting.

Motor—Williams capacitor-start motor. Oil once a year.

Condenser—Fedders fan-cooled fin tube condenser.

Evaporator—Fedders tinned copper tube evaporator. Float valve refrigerant control. Aluminum ice trays.

Guarantee—System and cabinet 1 year. Serviced by dealers.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
S-354-1	4.2	$.....	102	1/8	CH_3Cl	285	L 53 x 24½ x 20¼	P 26 x 19 x 15½	9.7	5	3	54	3¾
S-355-1	5.6	.....	102	1/8	CH_3Cl	335	L 56½ x 26 x 21¼	P 29½ x 20½ x 16½	12.1	6	3	63	4¼
S-355-2	5.6	.....	155	1/6	CH_3Cl	345	L 56½ x 26 x 21¼	P 29½ x 20½ x 16½	12.1	6	3	63	4¼
S-356-2	6.5	.....	155	1/6	CH_3Cl	390	L 59¾ x 30¼ x 23	P 32¼ x 23½ x 15¾	13.4	5	4	84	8½
D-3566-2	6.5	.....	155	1/6	CH_3Cl	390	D 62¾ x 30¼ x 23	P 32¼ x 23½ x 15¾	13.85	5	4	84	8½
D-358-2	6.5	.....	155	1/6	CH_3Cl	415	D 62¾ x 34 x 24	P 32 x 27½ x 16¼	16.5	5	4	84	8½
P-3566-2	7.9	.....	155	1/6	CH_3Cl	410	P 62¾ x 30¼ x 23	P 32¼ x 23½ x 15¾	13.85	5	4	84	8½
P-358-2	7.9	.....	155	1/6	CH_3Cl	435	P 62¾ x 34 x 24	P 32 x 27½ x 16¼	16.5	5	4	84	8½

M & E

Merchant & Evans Co., Philadelphia, Pa.

Cabinet—Seeger 1-door cabinet, Bakelite breaker strip. Multicell insulation, 2 in. thick throughout for model L-404; 2⅛ in. throughout for models P-504 and D-504; 3 in. throughout for models D-604, P-604, and P-704. Chromium-plated hardware.

Compressor—Merchant & Evans open-type reciprocating 1-cylinder compressor. Belt driven with compressor speed 625 r.p.m. for all models except model L-404, which has compressor speed of 1,725 r.p.m. Model L-404, bore 1 in., stroke ¾ in.; all others, bore 1½ in., stroke 1¼ in. Diaphragm shaft seal. Compressor below food compartment. Sun Oil used for lubrication.

Control—Tagliabue manual temperature control.

Motor — Wagner repulsion-induction motor. Oil yearly.

Evaporator—McCord copper evaporator. Thermostatic control. Detroit Lubricator and Mayson expansion valves. Aluminum ice trays.

Guarantee—System and cabinet, 1 year. Serviced by dealers and independent service firms.

Condenser—Merchant & Evans fan-cooled fin tube condenser.

Special Features—Interior electric light and foot pedal.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
L-404	4.07	$128.00	70	1/6	SO_2	...	D 56⅛ x 25⅜ x 20½	P 27½ x 19½ x 15	8.95	..	..	56	..
D-504	5.0	180.00	100	1/6	SO_2	...	D 60½ x 26⅜ x 22	P 30 x 20½ x 16	12.45	..	..	84	..
P-504	5.0	202.00	100	1/6	SO_2	...	P 60½ x 26⅜ x 22	P 30 x 20½ x 16	12.45	..	..	84	..
D-604	6.17	212.00	100	1/6	SO_2	...	D 63⅜ x 30½ x 22	P 32 x 23⅝ x 15½	12.85	..	..	112	..
P-604	6.17	243.00	100	1/6	SO_2	...	P 63⅜ x 30½ x 22	P 32 x 23⅝ x 15½	12.85	..	..	112	..
P-704	7.41	283.00	100	1/6	SO_2	...	P 63⅜ x 34⅛ x 23	P 32 x 23¼ x 16⅛	15.15	..	..	140	..

Starr Freeze

Starr Co., Richmond, Ind.

Cabinet—Starr cabinet, wood frame, walnut breaker strip, rubber gasket. One door for models T, R, and N; 2 doors on models Q and G; 4 doors on model H. Zilem fibre sealed slab insulation. Thickness of insulation—model T 2 in. throughout; model R sides, back, door, and bottom 2¼ in., top 3 in.; model N top, sides, back, and door 3 in., bottom 4 in.; model Q 3⅜ in. throughout; model G 3⅛ in. throughout; model H top, sides, back, and door 3⅛ in., bottom 4 in. Winters & Crampton and Grand Rapids Brass chromium-plated hardware.

Compressor—Starr open-type reciprocating compressor. Models T and R, 1 cylinder; all others, 2 cylinders. Belt drive. Compressor speed—models T, R, and G, 300 r.p.m.; model N, 500 r.p.m.; model Q, 600 r.p.m.; model H, 400 r.p.m. Compressor bore and stroke—models N and Q, bore 1⅛ in., stroke 1¼ in.; all others, bore 1.64 in., stroke 1.625 in. Sylphon shaft seal. Compressor below food compartment. Refrigerant charge—10 oz., 15 oz., 22 oz. Lubrication—10 oz. Purol oil.

Control—Cutler-Hammer automatic temperature control with manual defrosting.

Motor—Leland capacitor. Oil yearly.

Evaporator—Starr expansion type copper evaporator. Thermostatic control. Mayson expansion valve. Aluminum ice trays.

Condenser—Starr fan-cooled condenser.

Guarantee—System and cabinet, 1 year. Serviced by dealers and independent service companies.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
T	2.85	$.....	80	1/8	SO_2 or CH_3Cl	72	* 50¾ x 20½ x 20	P 25⅜ x 15½ x 13⅝	4.4	3	2	30	3
R	4.0	.....	100	1/6	SO_2 or CH_3Cl	72	* 55¾ x 24⅝ x 22⅝	P 27½ x 19¾ x 16⅛	9.0	5	2	56	3¾
N	6.1	.....	151	1/6	SO_2 or CH_3Cl	74	* 58⅝ x 33 x 26⅝	P 29½ x 25¼ x 17¼	13.0	7	4	112	7½
Q	7.18	.....	203	1/5	SO_2 or CH_3Cl	79	* 57½ x 37½ x 24	P 30 x 31 x 19¼	11.75	7	5	140	8⅜
G	12.1	.....	263	1/4	SO_2 or CH_3Cl	147	* 67 x 49½ x 26	P 35 x 42½ x 16½	20.75	12	6	224	15
H	17.8	.....	354	1/3	SO_2 or CH_3Cl	153	* 67½ x 49½ x 25½	P 52¼ x 42¾ x 16	28.16	14	8	336	22½

*"Nu Spede" enamel.

Universal Cooler

Universal Cooler Corp., Detroit, Mich.

Cabinet—Truscon 1-door cabinet, steel frame, Bakelite breaker strip for all but model 435, which uses wood, rubber gasket. Thermocraft insulation. Thickness of insulation—model 435 top, sides, back, and bottom, 2 in., door, 2½ in.; model 535 top, sides, and back, 2½ in., door, 3 in., bottom, 2¾ in.; model 635 and 835 top, sides, back, and door, 3 in., bottom, 3½ in. Grand Rapids brass chromium-plated hardware.

Compressor—Universal Cooler sealed reciprocating compressor, 1 cylinder for all except model 835, which has two. Belt-driven with compressor speed 430 r.p.m. for all except model 835, which is driven at 400 r.p.m. Bore 1½ in., stroke, 1¼ in. Bellows shaft seal. Compressor below food compartment. Refrigerant charge 1¼ lbs. except 835, 1½ lbs. Lubrication—⅔-pt. White Star No. 425 or Standard Oil No. 4049, for all models except model 835, which uses 1¼ pts.

Evaporator—Universal Cooler copper and brass tubular evaporator. Thermostatic control. Detroit Lubricator expansion valve. Aluminum ice trays, with one rubber tray in all except model 435.

Control—Tagliabue automatic temperature control, with wide cycle defrosting.

Motor—Wagner capacitor. Oil annually.

Condenser—Long fan-cooled radiator-type condenser.

Guarantee—Cabinet and system, 1 year. Serviced by dealers and independent service men.

Special Features—All models except 435 equipped with interior electric light. Models 535, 635, and 835 equipped with fast-freezing dessert compartment.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
435	4.3	$117.50	96	1/6	CH_3Cl	215	* 54¼ x 23⅞ x 20¼	P 26¾ x 19½ x 16¼	8.2	3	3	54	3½
535	5.2	159.50	96	1/6	CH_3Cl	250	* 58¼ x 26¼ x 22	P 29 x 21 x 17	11.7	4	3	63	4
635	6.3	189.50	96	1/6	CH_3Cl	285	* 60 x 30 x 23	P 30 x 23¾ x 17½	13.6	4	3	84	6
835	8.1	249.50	175	1/5	CH_3Cl	335	* 62⅝ x 32¾ x 24	P 33½ x 26½ x 18½	15.6	5	4	140	10

*Alchemik with black Alchemik base except model 435 which has white Alchemik legs.

ELECTRIC REFRIGERATION NEWS
Registered U. S. Patent Office
Copyright, 1935, by Business News Publishing Co.
Published Every Week by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242.
Production Dept., 550 Maccabees Bldg., Columbia 4245.

Subscription Rates—U. S. and Possessions and all countries in the Pan-American Postal Union: $3.00 per year; 2 years for $5.00. Canada: $6.00 per year (due to special tariff). All Other Countries: $5.00 per year (U. S. Money) (See "Buyers Guide" columns for combination rates with the 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.) Notice: We employ no subscription agents or solicitors. Pay no money to strangers claiming to represent this company. Send orders and remittances direct by mail.

F. M. COCKRELL, *Publisher*

GEORGE F. TAUBENECK, *Editor*
PHIL B. REDEKER, *Managing Editor*
A. J. CUTTING, *Statistical Editor*
FRANCES MCNAMARA, *Assistant Editor*
THEODORE T. QUINN, *Staff Writer*

GEORGE N. CONGDON, *Business Manager*
JOHN R. ADAMS, *Production Manager*
JEAN H. ADAMS, *Subscription Manager*
HELEN K. GILMORE, *Assistant Adv. Mgr.*

Member, Audit Bureau of Circulations
Member, Associated Business Papers
Member, Periodical Publishers Institute

VOL. 15, NO. 7, SERIAL NO. 325, JUNE 12, 1935

Has TVA Propaganda Helped the Industry?

SPEAKING before the third annual convention of the Edison Electric Institute last week, G. C. Estill, president and general manager of the Florida Power & Light Co., declared that as a result of TVA operations "large use of electric service is more definitely planted in the minds of our customers than ever in the history of our country. This is largely due to the recent large volume of front-page space given to uses of electricity. This front-page space we could, under no circumstances, have ever bought and paid for. So, *for the life of the industry,* let's capitalize on this fact. Lots of this front-page and radio propaganda is certainly detrimental to our companies as such, yet this publicity has surely made the public generally desire to use electricity for more services than ever."

Mr. Estill's remarks, while undoubtedly made in good faith, are a sample of a species of fallacious thinking about the TVA which has been granted considerable credence around the electrical industry, and which has occasioned a number of rather smugly self-congratulatory statements by executives in and writers on the electrical equipment business—simply because no one seems to have challenged the logic of the theory.

Do Actual Sales Result?

Just because the electrical business has figured frequently in the day's news since the inception of the TVA, it cannot be inferred that sales of electrical appliances should take a large jump as an immediate result. Even if front-page mention of electricity, rates, and TVA-emblem appliances does stimulate interest in electrical appliances, the extent of such interest *and the translation of that interest into actual sales* would be extremely difficult to measure.

A much more important fact which should be taken into consideration when contemplating the TVA problem is the reduction of *to-the-point* advertising of electrical appliances by dealers whose margins have been cut by insistence of government bureaucrats that prices on electrical appliances must come down drastically. So hard did the price-cutting engendered and encouraged by the TVA and EH&FA authorities hit dealers in the Tennessee Valley that many of them were forced to quit the electrical appliance business altogether. Others had to do business on such infinitesimal margins that advertising the products they hoped to sell was simply out of the question.

Sales executives of more than one appliance manufacturer have told editors of the NEWS that retail prices—and dealer margins—all over the country have been inadequate to allow for proper promotion, largely because the TVA propaganda has given the industry a mild case of the jitters.

The sneering assumption of TVA officials that electric refrigeration manufacturers are a bunch of Scrooges out to gouge the public for all the traffic will bear, and that slashing prices would simply call for a reduction in excess profits, surely can do sales no good anywhere. Nor can the idea (which has already become fairly widespread) that the rapid extension of the TVA scheme to other sectors of the nation will mean sharply cut prices on electrical appliances in the reasonably near future.

Yardstick for Rates Is Rigged

This high-handed business of making sweeping statements to the press and public intimating that the entire electrical industry is a huge profit-taking enterprise which has been gypping the country for years has undoubtedly done plenty of damage to the industry among thousands who accept such broad statements unthinkingly. The whole TVA project, in fact, is built on the unproved generalization that prices for electricity and electrical products are far too high, and that a yardstick is needed to show what they should actually be.

Methods of TVA officials in going about the job of establishing such a yardstick were revealed in recent findings of Comptroller-General J. R. McCarl, who audited TVA's 1934 accounts and took exception to several items. The TVA, it would seem, has been rigging the yardstick. For instance: When plant and equipment costing $132,792,294 were transferred to the TVA, they were accounted for on its books at $51,000,000.

"The nature of exceptions established," the McCarl report stated, "consists of purchases without competition in violation of Section 3709, revised statutes; modification of specifications; awards on basis of personal preference; dual compensation; excessive allowances and reimbursement of traveling expenses to prospective employees; overpayment on payrolls; payment of payrolls without administrative approval. Also lump sum payments under cost-plus contracts and fees without original invoices and in excess of reported progress of work; claims paid for loss and damage to property; apparent overpayments on electric equipment under annual agreements." Mr. McCarl was also of the opinion that the TVA was accumulating an entirely inadequate reserve for depreciation, suggesting that the present method of accounting would be justified only if revenues of the Authority were 10 times the present amount.

All of which should spotlight the get-results-at-any-cost basis on which TVA officials are working, and should indicate just how reliable the yardstick they develop will be. Another sample of the type of business men these TVA officials are may be had in the fact, brought out in congressional hearings, that the TVA had indulged in the land-shark trick of purchasing two small tracts of land on the Little Tennessee River in North Carolina, in order to be able to block a 100-million-dollar power development by the Aluminum Co. of America.

When TVA's Chairman Arthur E. Morgan was questioned on this point by a House committee, he replied: "The move was necessary in order to force cooperation by the company with the TVA's planned development of the Tennessee Valley." And right there is an unguarded utterance which shows how these men think. "*Force* cooperation"—in other words, use the Big Stick to establish the yardstick.

Supreme Court Should Review TVA

If the NRA is unconstitutional because it was an unwonted assumption of federal control, it seems altogether reasonable to suppose that the TVA, with its unprecedented arrogation of powers to federal bureaucrats, is unconstitutional also. Famed constitutional lawyers such as Newton D. Baker have affirmed that supposition. Should that be the case, the sooner the whole matter is aired in the Supreme Court the better for the industry-at-large.

And before anyone else gives voice to the premise that TVA machinations have been invaluable publicity for the industry, perhaps it would be wise to inquire into the validity of the original assumption.

LETTERS

NRA—Pro and Con

Editor's Note: Letters and telegrams printed below were received too late to be printed in the last issue, along with other comments by industry leaders on the NRA decision of the Supreme Court. They are replies to the following wire from the editor:

"Do you believe NRA plan should be continued in some form, even if it is necessary to change the constitution? Can industry solve its own problems, or is government regulation needed? What effect will the recent Supreme Court decisions adverse to New Deal have on refrigeration industry?"

Mr. (Mac)Ruthenburg Sends 10 Words

Evansville, Ind.

Editor:

Retel Second No Period Yes Period Quien Sabe Question Mark.

LOUIS RUTHENBURG, President,
Servel, Inc.

Jones, Fairbanks-Morse

Chicago, Ill.

Editor:

Regret wire regarding NRA not received for timely answer. My personal views are that we are not justified in changing the Constitution to provide for NRA in any form. While industry may need government assistance in crises, a program of prolonged regulation is unquestionably harmful. Do not know what course other refrigeration manufacturers will pursue. However, NRA repeal will not affect our policies or plans and my personal belief is that most other manufacturers will act likewise.

W. PAUL JONES, Vice President,
Fairbanks-Morse Home Appliances, Inc.

Rhodes, Kinetic Chemicals

Kinetic Chemicals, Inc.
Wilmington, Dela.

Editor:

We wish to acknowledge your wire of June 2 and would advise that our policy is to proceed along the same lines as were followed prior to Supreme Court decision on NRA. This voluntary action indicates our opinion that NRA is not essential to satisfactory solution of industrial problems. We are unable to predict effect on recent court action on refrigeration industry at this time.

W. W. RHODES,
Sales Manager.

Allen, Westinghouse

Montclair, N. J.

Editor:

Feel NRA has demonstrated many things most beneficial to refrigeration industry. We have now a great opportunity to show whether the industry leaders are wise and strong enough to retain these good features by self government.

A. E. ALLEN, Vice President,
Westinghouse Electric & Mfg. Co.

Mauthe, Sanitary Electric

Sanitary Electric Corp.
Fond du Lac, Wis.

Editor:

In my humble judgment, the administration of the NRA was just beginning to iron out its difficulties when the Supreme Court knocked it out. It was a terrific blow to labor and to industries that are highly competitive, because after all—I believe, the NRA aided in distributing the purchasing power of the masses.

The maximum hourly week and the minimum wage feature of the NRA ought to be maintained in some form. If, it is a question of changing the Constitution, then, of course, we're facing that old problem of states rights and just how far should the Federal government go in its limited powers.

During the Jeffersonian days, states rights were justified; but during these days of mass productivity, intra-state, interstate, and international as well, I am inclined to believe, Congress should have the power to legislate laws that will enable the Federal government to establish and supervise fundamental rules that industries should adhere to similar to the basic principles upon which the NRA was founded.

In answer to your second question, I say,—"Yes," industry can settle many of its own problems. I claim, however, that the Federal government can aid industry in the solving of its particular problems, through governmental orders that restrict as well as limit industry's rights, and at the same time allow industries certain privileges that were forbidden under the Sherman-Clayton Anti-Trust Laws.

In answer to your third question, I am not sure if I know just what the effect of the recent Supreme Court decision adversed to the NRA will be on the Refrigeration Industry. It is very difficult to tell at the present time because after all, the main concern is, will wages be cut? I have noticed from reports throughout the country and even in my own state that in some instances, wages have already been sliced.

And, in some instances, hours have been increased which will result in lay-offs. Generally speaking, when hours of industry exceed the normal weekly hours (assuming 40 hours is a normal hourly working week) the hourly earning of the worker is decreased. If this is going to be the trend then the purchasing power of the masses will be decreased and the Refrigerator Industry will be hurt.

The NRA may have had a lot of faults, and the administration machinery may have been lax, but all in all, the purpose of the NRA is now recognizable and its accomplishments have really been outstanding.

For industry now to go back to the old order of things and again exploit its labor and slaughter its way as it did in the regime of 1931—would be a grave error. During these times of mounting relief rolls, and millions of unemployed, I can not help but feel that without some Federal control over industry's problems, the slaughter days will again appear.

CARLTON MAUTHE,
President and Production Mgr.

Fedders, Fedders Mfg.

Buffalo, N. Y.

Editor:

Pardon delay in answering wire. Believe some plan limiting hours and wages is absolutely essential in order to assure stabilization of all industry and to prevent unlimited chiseling by unscrupulous manufacturers.

L. F. FEDDERS, President,
Fedders Mfg. Co.

Kahn, Truscon

Truscon Steel Co.
Youngstown, Ohio

Editor:

Referring to your telegram of the 3 instant I am of the firm conviction that the NRA should be continued in some form. Certain modifications are necessary, but it is by no means important that the whole issue be discontinued. In fact, some form of NRA is absolutely necessary for the continuance of industry in general on a profitable basis.

I am of the conviction that industry cannot solve its own problem. Private interests are too conflicting; it requires some dominant influence to coordinate all. Nor, do I believe that such coordination can be brought about through legislation by 48 State Governments. A centralized authority is absolutely necessary.

In the absence of a permanently established central authority, our Federal anti-trust laws should be changed so as to encourage industry in getting together in the establishment of fair codes of business practice and the maintenance of a reasonable price structure. Congress should do away with obsolete anti-trust laws or modify them so that their disastrous effects will be obviated.

The effect of the Supreme Court decision so far as the Refrigeration Industry is concerned is bound to be similar to its effect on all industry. Unless fair codes of business practice are established and maintained, competition will so reduce the standard of prices that its result will not only be fatal to industry but also to labor.

J. KAHN,
President.

Fiesta (Continued)

Hardy Mfg. Co., Inc.
100 Davis Ave., Dayton

Editor:

Thanks for your letter of May 28, regarding revised specifications for household models. As our products are all "commercial," we of course will have nothing to submit for this issue.

We have just started a series of ads on our commercial equipment in the May 22 issue, this being our initial advertising venture.

While answering your letter, let me take the opportunity of thanking you for a wonderful evening at your "Fiesta" during the A.S.R.E. meeting. That was a regular party and I am sure every one enjoyed your hospitality to the limit.

We represented probably the youngest refrigeration firm there, though the product is not new, and we have personally been associated in the industry for a long time. As you know we took over the commercial and air-conditioning division from the old Trupar Co., when it was sold.

HOMER H. HARDY,
President.

Detroit Lubricator Co.
40 West 40th St., New York City

Dear Mr. Cockrell:

I wish to thank you again for your kind hospitality extended during the recent convention of the American Society of Refrigerating Engineers. I certainly enjoyed the dinner and the evening's entertainment you arranged, and I know that this meeting in Detroit and your kind greetings will long be remember by all A.S.R.E. men.

R. E. TOWNSEND.

Lectrik-Ice

Uniflow Mfg. Co., Erie, Pa.

Cabinet—Uniflow 1-door cabinet on all but model DM-8 which has two doors. Wood frame, Bakelite and wood breaker strips, rubber gasket, Balsam wool insulation on "DM" models, Temlok on "M" models. Thickness of insulation—model M-45, 2 in. in top, door, and bottom, 1½ in. in sides and back; model M-60, 2½ in. in top, bottom, and door, 2 in. in sides and back; all other models, 3 in. throughout. Winters & Crampton chromium-plated hardware. Semi-concealed on DM models.

Compressor—Open-type reciprocating 1-cylinder Uniflow compressor with 1⅝-in. bore for all models, and 1-in. stroke for models M-45, M-60, and DM-5, with 1¾-in. stroke for all other models. Compressor speed 550 r.p.m. for models M-45, M-60, and DM-5; all others, 440 r.p.m. Belt drive. Bellows shaft seal. Compressor below food compartment. Refrigerant charge—1½ lbs. in models M-45, M-60, and DM-5; 1¾ lbs. in all other models. Lubrication—12 oz. Sonneborn white oil.

Control—Ranco automatic adjustable temperature control. Manual defrosting.

Motor—Capacitor or repulsion-induction motors. Oil three times a year.

Condenser—Fan-cooled fin-tube condenser.

Evaporator—Uniflow copper-tinned tubular-finned evaporator. Thermostatic control. Expansion valve. Aluminum ice cube trays with handles.

Guarantee—System and cabinet 1 year. Serviced by dealers and independent service firms.

Special Features—Vegedore, ten-point temperature control with vacation setting, electric light, chromium front trays.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
M-45	4.0	$114.00	75	1/6	CH_3Cl	...	L 53¼ x 23 x 23½	P 26¼ x 19¼ x 15¼	8.0	3	2	56	4
M-60	5.25	135.00	75	1/6	CH_3Cl	...	L 56 x 26½ x 24	P 27¾ x 21 x 17	12.0	4	3	84	6
DM-5	5.0	175.00	75	1/6	CH_3Cl	327	D 56 x 24½ x 24½	P 29½ x 18½ x 17⅜	10.5	4	2	56	4
DM-6	6.0	190.00	150	1/4	CH_3Cl	341	D 56 x 28½ x 24½	P 29½ x 22½ x 17⅜	12.8	5	3	84	6
DM-7	7.0	225.00	150	1/4	CH_3Cl	375	D 56 x 31⅞ x 24½	P 29½ x 25⅞ x 17⅜	15.0	6	3	112	8
DM-8	8.0	275.00	150	1/4	CH_3Cl	390	D 56 x 35½ x 24½	P 29½ x 29¼ x 17⅜	15.8	7	3	112	8

Mayflower

Trupar Mfg. Co., Detroit, Mich.

Cabinet—Truscon 1-door cabinet, steel frame, Panelyte breaker strip, rubber gasket. Zerotex insulation. Thickness of insulation—model M-505 top, sides, back, and bottom, 2 in., door, 2½ in.; model M-635, top, sides, and back, 2½ in., door, 3 in., bottom, 2¾ in.; model M-755 and M-955, top, sides, back, and door, 3 in., bottom, 3½ in. Grand Rapids Brass chromium-plated hardware.

Compressor—Mayflower open-type reciprocating 1-cylinder compressor. Bore 1½ in. on all except model M-955, which has 2-in. bore. Stroke 1½ in. Belt-driven with compressor speed 360 r.p.m. for all except model M-755, which has compressor speed of 400 r.p.m. Balanced bellows shaft seal. Compressor below food compartment. Refrigerant charge—1¼ lbs. Lubrication—¾-pt. Suniso oil.

Control—Penn automatic temperature control with wide cycle defrosting.

Motor—Delco or Wagner motor, with condenser start. Oil motor every 6 months.

Evaporator—Mullin steel evaporator with porcelain coated shelves. Thermostatic control. Detroit Lubricator expansion valve. Aluminum and rubber ice cube trays.

Condenser—Long fan-cooled fin tube condenser.

Guarantee—Cabinet and system, 1 year. Serviced by dealers only.

MODEL NO.	CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
M-505	4.5	$114.00	100	1/6	CH_3Cl or SO_2	285	L 54¼ x 23¾ x 20¼	P 26¾ x 19½ x 16¼	7.6	3	3	63	6
M-635	5.5	170.00	100	1/6	CH_3Cl or SO_2	321	L 58¼ x 26¼ x 22	P 29 x 21 x 17	11.7	4	3	84	8
M-755	6.6	193.00	110	1/6	CH_3Cl or SO_2	368	L 60 x 30 x 23	P 30 x 23¾ x 17½	14.0	4	3	84	8
M-955	8.8	228.00	150	1/5	CH_3Cl or SO_2	430	L 62⅝ x 32¾ x 24	P 33½ x 26½ x 18½	16.8	4	4	112	10

National

National Refrigeration Corp., Dayton, O.

Cabinet—National 1-door cabinet on all but model N87, which has 2 doors. Wood and steel frame, Bakelite breaker strip on all but model N46, which uses Masonite. Miller rubber gasket. Balsam Wool insulation, 3 in. throughout on all but model N46, which has 2 inches. Grand Rapids brass stamped and cast chrome-plated hardware.

Compressor—Open-type reciprocating compressor, 1-cylinder on all but models N77 and N87, which have 2 cylinders with bore 1⅛-in., and stroke 1¼-in. Belt-driven with compressor speed 800 r.p.m. Refrigerant charge—model N66, 4 lbs. 6 oz.; models N77 and N 87, 5 lbs.; all others, 3 lbs., 6 oz. Sunisco No. 3 lubrication—1½ pts.

Control—Cutler-Hammer or Tagliabue manual temperature control. Wide cycle defrosting.

Evaporator—Mullins shell-type steel evaporator, finished in porcelain. Thermostatic control. Prestat expansion valve. Aluminum trays, with Flexotray optional.

Motor—G-E capacitor and repulsion induction motor. Oil every three months.

Condenser—Bush fan-cooled fin tube condenser.

Special Features—Interior electric light all models except N-46.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
N-46	4.0	$.....	95	1/6	SO_2	280	L 50 x 23½ x 23	P 26¼ x 18 x 15¼	6.5	3	2	56	5.0
N-54	5.23	.....	95	1/6	SO_2	325	L 56 x 24½ x 24½	P 29½ x 18½ x 17⅜	10.53	6	3	84	7.5
N-66	6.43	.....	95	1/6	SO_2	355	L 56 x 28½ x 24½	P 29½ x 22½ x 17⅜	12.83	6	3	84	7.5
N-77	7.43	.....	190	1/4	SO_2	375	L 56 x 31⅞ x 24½	P 29½ x 25⅞ x 17⅜	15.08	6	4	112	10.0
N-87	8.43	.....	190	1/4	SO_2	400	L 56 x 35¼ x 24½	P 29½ x 29¼ x 17⅜	15.83	7	4	112	10.0

O'Keefe & Merritt

O'Keefe & Merritt Co., Los Angeles, Calif.

Cabinet—One-door on all except model 1035 which is a 2-door O'Keefe & Merritt cabinet with wood and steel frame, Bakelite breaker strip and rubber gasket. Celotex insulation in model 354—2 in.; models 355 and 356—3 in.; all others—3½ in. National Lock chromium-plated brass hardware.

Compressor—O'Keefe & Merritt open-type reciprocating 2-cylinder compressor, belt driven at 450 r.p.m. Bore in model 735, 1⅞ in.; model 1035, 1½ in.; all others, 1¼ in. Stroke 1¼ in. Rotary Seal shaft seal. Compressor mounted under food compartment. Refrigerant charge—models 354 and 355, 2½ lbs.; models 356 and 635, 3 lbs.; model 738, 3¼ lbs.; model 1035, 4 lbs. Lubrication—12 oz. No. 4 Suniso.

Condenser—Flexo fan-cooled, fin tube.

Control—Ranco semi-automatic temperature control, non-adjustable by user, but has vacation setting, with defrosting and 12 freezing speeds.

Evaporator—O'Keefe & Merritt steel shell evaporator. Detroit Lubricator expansion valve. Alumilited aluminum ice trays with finger release.

Motor—General Electric and Wagner capacitor. Oil every three months.

Guarantee—Cabinet and system 1 year. Serviced by manufacturer. Replacement parts sold to service companies.

Special Features—Electric light in all models. Combination drawer-type food freshener with food rearranging shelf cover of stainless steel, sliding dairy basket, built-in thermometer, and rubber ice trays on models 635, 735, and 1035.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
354	4.17	$124.50	103	1/6	SO_2	325	L 54 x 24 x 22¾	P 25 x 18 x 17	7.0	..	2	56	3½
355	5.17	149.00	103	1/6	SO_2	375	L 58½ x 25 x 22¾	P 29 x 19 x 17	9.5	..	2	56	3½
356	6.22	169.00	103	1/6	SO_2	425	L 59¼ x 28 x 22¾	P 30 x 22 x 17	11.2	..	3	84	5¼
635	6.22	$198.00	103	1/6	SO_2	425	L 59¼ x 29 x 22¾	P 30 x 22 x 17	11.2	4	3	84	5¼
735	7.42	225.00	...	1/6	SO_2	450	L 62¼ x 31 x 22¾	P 33 x 24 x 17	12.2	..	4	112	7
1035	10.45	325.00	...	1/4	SO_2	575	L 62¼ x 43 x 22¾	P 33 x 36 x 17	20.0	..	6	168	10½

Parker Froskist

Parker Mfg. Co., Los Angeles, Calif.

Cabinet—Froskist 1-door cabinet except model 1035 which has two doors. Steel frame, Panelyte breaker strip, rubber gasket. Insulite insulation in model 354 2 in. throughout; models 355 and 356, 3 in.; all other, 3½ in.

Compressor—Open-type reciprocating 2-cylinder Froskist compressor with 1¼-in. bore (on all but models 735 and 1035 which have a 1⅜ and a 1½-in. bore, respectively), and 1¼-in. stroke. Compressor speed, 450 r.p.m. with belt drive. Rotary shaft seal.

Motor—G-E capacitor motor.

Condenser—Bush fan-cooled fin tube condenser.

Evaporator—Froskist steel evaporator, cadmium plated. Thermostatic control. Detroit Lubricator expansion valve. One rubber ice cube tray and ice tray release.

Control—Ranco automatic temperature control. Manual defrosting with automatic reset.

Guarantee—1 year on system. Serviced by dealers and independent service firms.

Special Features—Combination drawer-type food freshener with food rearranging shelf cover of stainless steel. Sliding dairy basket. Interior electric light. Built-in thermometer.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
354	4.17	$.....	....	1/6	SO_2	325	L 54 x 24 x 22¾	P 25 x 18 x 17	7.0	..	2	56	3.5
355	5.17	.....	....	1/6	SO_2	375	L 58½ x 25 x 22¾	P 29 x 19 x 17	9.5	..	2	56	3.5
356	6.22	.....	....	1/6	SO_2	425	L 59¼ x 28 x 22¾	P 30 x 22 x 17	11.2	..	3	84	5.25
635	6.22	.....	....	1/6	SO_2	425	L 59¼ x 29 x 22¾	P 30 x 22 x 17	11.2	..	3	84	5.25
735	7.42	.....	....	1/6	SO_2	450	L 62¼ x 31 x 22¾	P 33 x 24 x 17	12.2	..	4	112	7.0
1035	10.45	.....	....	1/4	SO_2	575	L 62¼ x 43 x 22¾	P 33 x 36 x 17	20.0	..	6	168	10.5

Sanitary Electric

Sanitary Electric Corp., Fond du Lac, Wis.

Cabinet—Sanitary 1-door cabinet for all models except model 870, which has 2 doors. Wood frame, Sanalite breaker strip, rubber gasket. Sanitex insulation. Insulation thickness—model 870 and 700, 3 in. throughout; model 522, 2 in. throughout; model 310, 1½ in. throughout; model 420, top, sides and back, 1½ in., door and bottom, 2 in.; model 22B, top, door and bottom, 2 in., sides and back 1½ in. Sanitary chrome finished hardware.

Compressor—Sanitary open-type reciprocating compressor, 1 cylinder on all but model 870, which has 2 cylinders with 1½-in. bore, 1¼-in. stroke. Belt-driven with compressor speed 430 r.p.m. on all but model 870, which is driven at 400 r.p.m. Sylphon shaft seal. Refrigerant charge—1 to 1½ lbs. Lubrication—1 pt. Argon oil.

Evaporator—Porcelain and steel evaporators on deluxe models. Thermostatic control. Aluminum trays, with ice tray release.

Control—Adjustable Tagliabue manual temperature control, with manual defrosting and economy setting.

Condenser—Fan-cooled fin and tube.

Guarantee—System and cabinet, 1 year. Serviced by dealers and independent service firms.

Motor—Various makes capacitor motor. Oil yearly.

Special Features—Interior electric light, vegetable basket, swinging shelves, and rubber ice cube trays on deluxe models.

MODEL NO.	NET CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
22B	2.11	$ 72.50	96	1/6	CH_3Cl	200	L 35 x 27 x 18	P 12½ x 23⅜ x 13¼	4.13	2	2	42	3
310	3.0	85.00	96	1/6	CH_3Cl	210	L 47½ x 22½ x 18½	P 21 x 19 x 13½	6.29	3	2	42	3
420	4.0	100.00	96	1/6	CH_3Cl	270	L 48⅝ x 22⅞ x 20	P 25½ x 19½ x 14¼	7.0	3	2	42	3
522	5.0	125.00	96	1/6	CH_3Cl	350	L 54 x 25¼ x 21½	P 29⅞ x 20¾ x 14⅝	10.85	5	3	63	4½
700	6.5	154.55	96	1/6	CH_3Cl	395	L 56¾ x 29¼ x 25½	P 30¾ x 22¾ x 17½	14.4	5	3	84	6
870	8.0	210.00	180	1/5	CH_3Cl	425	L 59 x 35 x 24	P 33 x 28½ x 16	18.3	7	4	112	8

Truscon

Truscon Steel Co., Cleveland, Ohio.

Cabinet—Truscon 1-door cabinet, steel frame, Bakelite breaker strip, rubber gasket. Grand Rapids brass hardware, chromium-plated.

Compressor—Universal Cooler open-type reciprocating compressor, 1-cylinder on all but model T835, which has 2 cylinders. 1½-in. bore, 1¼-in. stroke. Belt-driven with compressor speed 430 r.p.m. on all but model T-835 which is driven at 400 r.p.m. Bellows shaft seal. Compressor below food compartment. Refrigerant charge—1 lb. Lubrication—1¼ pts.

Control—Tagliabue automatic temperature control with 8 positions for cold control plus defrosting position for setting by user. No vacation setting.

Evaporator—Universal Cooler copper and brass evaporator. Thermostatic control. Detroit Lubricator expansion valve. Aluminum ice cube trays.

Motor—Wagner. Oil yearly.

Condenser—Fan-cooled radiator type.

Guarantee—System and cabinet, 1 year.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
T-435	4.3	$.....	99.2	1/6	CH_3Cl	...	L 54¼ x 23⅞ x 20¼	P 26¾ x 19½ x 16¼	8.2	3	3	54	3½
T-535	5.2	.....	99.2	1/6	CH_3Cl	...	L 58¼ x 26¼ x 22	P 29 x 21 x 17	11.7	4	3	63	4
T-635	6.3	.....	99.2	1/6	CH_3Cl	...	L 60 x 30 x 23	P 30 x 23¾ x 17½	13.6	4	3	84	6
T-835	8.1	.....	180	1/5	CH_3Cl	...	L 62½ x 32⅞ x 24	P 33½ x 26½ x 18½	15.6	5	4	140	10

Zerozone

Zerozone Refrigeration Co., Detroit, Mich.

Cabinet—Truscon 1-door cabinet, steel frame, Panelyte breaker strip, rubber gasket. Zerotex insulation. Thickness of insulation—model Z-505 top, sides, back, and bottom, 2 in., door, 2½ in.; model Z-635, top, sides, and back, 2½ in., door, 3 in., bottom, 2¾ in.; model Z-755 and Z-955, top, sides, back, and door, 3 in., bottom, 3½ in. Grand Rapids Brass chromium-plated hardware.

Compressor—Zerozone open-type reciprocating 1-cylinder compressor. Bore 1½ in. on all except model Z-955, which has 2-in. bore. Stroke 1½ in. Belt-driven with compressor speed 360 r.p.m. for all except model Z-755, which has compressor speed of 400 r.p.m. Balanced bellows shaft seal. Compressor below food compartment. Refrigerant charge—1¼ lbs. Lubrication—¾-pt. Suniso oil.

Control—Penn automatic temperature control with wide cycle defrosting.

Motor—Delco or Wagner motor, with condenser start. Oil motor every 6 months.

Evaporator—Mullin steel evaporator with porcelain coated shelves. Thermostatic control. Detroit Lubricator expansion valve. Aluminum and rubber ice cube trays.

Condenser—Long fan-cooled fin tube.

Guarantee—Cabinet and system, 1 year. Serviced by dealers only.

MODEL NO.	CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR		SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
Z-505	4.5	$114.00	100	1/6	CH_3Cl or SO_2	285	L 54¼ x 23¾ x 20¼	P 26¾ x 19½ x 16¼	7.6	3	3	63	6
Z-635	5.5	170.00	100	1/6	CH_3Cl or SO_2	321	L 58¼ x 26¼ x 22	P 29 x 21 x 17	11.7	4	3	84	8
Z-755	6.6	193.00	110	1/6	CH_3Cl or SO_2	368	L 60 x 30 x 23	P 30 x 23¾ x 17½	14.0	4	3	84	8
Z-955	8.8	228.00	150	1/5	CH_3Cl or SO_2	430	L 62⅝ x 32¾ x 24	P 33½ x 26½ x 18½	16.8	4	4	112	10

COMPANION MERCHANDISE

Electric Range Makers Open Cooperative Sales Drive

NEW YORK CITY—A concerted sales promotion and advertising drive, designed to acquaint the consumer public with the benefits and advantages of electric cookery, swung into action last week behind a barrage of advertising on the part of range manufacturers in *McCall's* Magazine, the July issue of which went on newsstands June 7.

Encouraged by increased sales and more favorable conditions in the nation generally, manufacturers making up the Range Section of Nema, at a recent meeting in Chicago, decided to give electric cookery much the same sort of advertising boost as has in the past been given electric refrigeration, vacuum cleaners, and washers.

The program of concerted advertising was recommended by a committee composed of W. A. Grove, Edison General Electric Appliance Co., S. D. Mahan, Westinghouse Electric & Mfg. Co., and Walter S. Rowe, Estate Stove Co.

Manufacturers carrying separate advertisements in July *McCall's* are Edison General Electric Appliances Co., General Electric Co., and Westinghouse Electric & Mfg. Co.

National advertising in *McCall's* totaled five pages, and reached an estimated 2,300,000 families.

To those acquainted with electric refrigerator advertising campaigns in the past, this advertising total may not be over-impressive. Fact is, however, that the first five pages constitute the largest amount of electric range advertising that has ever appeared in a single issue of any consumer magazine, and exceeds the total number of pages used to advertise electric ranges in all consumer magazines during 1934.

In its July issue, *McCall's* carried as an editorial feature in its Homemaking section an article on kitchen planning, considerable part of which was devoted to the range. Succeeding issues of the magazine will also carry editorial articles on electric cookery, prepared by Home Service women in the utility fields.

An article of electric range surface cookery, written by Miss Valentine Thorsen, home service director of the Northern States Power Co., will appear in September. This will be followed by another article, dealing with electric range oven cookery, and prepared by a woman from the electrical industry.

The articles are a part of a series on the use of electrical appliances being published regularly in the magazine, and prepared by utility home service workers serving as guest editors.

Belief of manufacturers that the electric range will be the next major household appliance to swing into popular favor were strengthened by reports of record-breaking early year sales from many parts of the country.

From a low point of 50,000 sales in 1933, electric range sales mounted to 123,000 units last year, and give evidence of reaching upwards of 200,000 units in 1935. Shipments for the first quarter of 1935 are reported as 77 per cent ahead of those in the corresponding period of last year.

Increase in the number of wired homes, and extensive promotion of ranges by utility companies, who, because of lowered rates, are faced with the necessity of increasing their power load, are other reasons which cause the range manufacturers to eye the future with optimistic mein.

The range sales offensive does not end with advertising—manufacturers are backing their magazine campaign with a program of intensive selling work.

Men were sent into the field to call on distributors, dealers, and utilities selling electric ranges in every important community throughout the country. Armed with a special range sales portfolio, these men explained the purpose of this range sales drive, pointing out the present opportunity for increased sales, and suggesting ways and means of tying in local activities to the national campaign.

In addition to these personal calls on the principal utilities, distributors, and dealers selling electric ranges, thousands of copies of a printed booklet went out last month. These booklets contained preprints of the *McCall's* advertisement, and definite suggestions for local sales activities embracing window streamers, local newspaper advertising, store displays, local radio advertising, cooking schools, and so forth.

Dealers and distributors were urged to time their local newspaper advertising so as to have at least one advertisement featuring electric ranges appear in the week of June 10, and to follow up with additional advertisements during June and July, when the magazine containing the national campaign is being read.

The plan books distributed to dealers were prepared under the direction of the electric range advertising committee of the Range Section of Nema.

The three manufacturers have provided dealers with special window streamers, which are enlarged reproductions of the border that appeared in each range advertisement in *McCall's*. The use of direct mail advertising, newspaper articles on electric cookery, demonstrations, cooking schools, and special range sales campaigns are also being urged to keep sales records at their present high level.

Fairbanks-Morse Adds 3 Electric Washers

CHICAGO—Fairbanks-Morse Home Appliances, Inc., of this city has added three new electric washing machine models to its line, which now consists of five electric models, two gasoline engine models, and two electric ironers.

Model 5-WD has an oversize tub encased in a streamline octagonal cabinet, finished in shades of gray, black, and nickel. The wringer has 2¼-in. balloon rolls, push-pull safety plate, and one hand bar reset of wringer. A drain hose is used instead of a faucet.

Features of this model include an electric floodlight, which comes on automatically when the washer starts and sends a beam of light into the tub; a 4-roll wringer; and double wringing in one operation. It has no safety or reverse levers.

Beckley & Pratt Buy Oil Burner Distributorship

NEW YORK CITY—James E. Beckley of this city and John A. Pratt, Montvale, N. J., have purchased the interests of Messrs. Mericle and Pollock in the Century Products Co. of New York City, distributor for Century oil burners, boiler-burner units, and humidifiers in this territory. Headquarters and display rooms continue to be in the General Motors building here.

Mr. Beckley was formerly vice president and treasurer of Electrographic Corp. Mr. Pratt has been a Century dealer for approximately five years.

General managership of the company will continue to be under the direction of Mr. Kelley, a director and officer of the organization.

Scott-Newcomb Sells 5,000 Burners in 2 Weeks

ST. LOUIS—Contract sales of Scott-Newcomb, Inc. to new customers amounted to more than 5,000 oil burner units in the first two weeks of May, reports Lewis L. Scott, president of the organization.

46 Radio Dealers to Be Guests of G-E

SCHENECTADY — As winners of grand awards in General Electric's recent "Band Wagon Tour" sales contest, 46 radio dealers from 25 states will be guests of the G-E merchandise department on a three-day trip, June 13-15, to the research laboratory in Schenectady, known as the "House of Magic," and to the company's radio plant in Bridgeport, Conn. The awards were made on a basis of sales quota realization.

The winning dealers will meet in Schenectady where, besides visiting the research laboratory, they will inspect the vacuum-tube engineering department in which the recently announced metal radio tubes were developed and will make a side trip to General Electric's 50-kilowatt broadcasting station, WGY, and its two shortwave stations, W2XAF and W2XAD, all located in South Schenectady.

On the second day, the dealers will be taken through the Bridgeport plant where all radio-receiver activities, except research, are located. There they will see the radio laboratory and the newly formed radio manufacturing organization in action. They will also be entertained in New York City.

304,785 Floor Cleaners Sold in Cleveland

CLEVELAND—During the first four months of 1935 manufacturers of electric vacuum cleaners sold 304,785 floor cleaners and 102,066 hand cleaners, according to figures released by the Vacuum Cleaner Manufacturers Association. Substantial increases over the same period of 1934 were shown in sales of both types of cleaners. Floor cleaner sales were up about 25 per cent while hand cleaners showed a gain of about 48 per cent.

Monthly sales of each type for the year 1935 through April were as follows:

	Floor Cleaners	Hand Cleaners
January	59,180	18,741
February	75,582	22,872
March	90,693	29,231
April	79,330	31,219
Four Months Total	**304,785**	**102,066**

Sales in each month of the current year for both types of cleaners have shown increases over 1933.

Four Burners Featured on Westinghouse Range

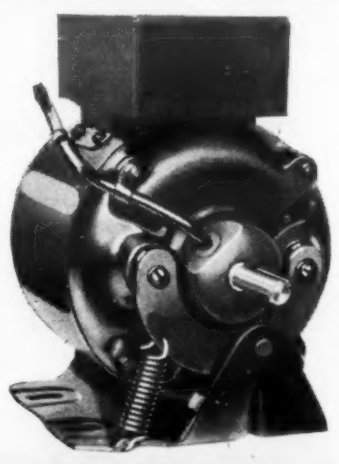
EAST PITTSBURGH—A new electric range, the A-64, has just been introduced by Westinghouse Electric & Mfg. Co. The new range has four surface units instead of the three units as standardized in the companion range, A-63.

Features include an extra eight inch, 1,500-watt unit; a drawer, mounted on roller bearings, that may be adapted as a warming compartment by installation of an extra element; end panels furnished in vitreous enamel; and streamlined design.

ALL DELCO MOTORS HAVE BURNISHED SHAFTS

For an electric motor bearing to be really long-lived, the shaft which revolves in the bearing must be unusually smooth. In Delco motors, smoothness of the shaft is assured by burnishing in a special machine developed by Delco engineers. This operation insures long bearing life, permits the maintenance of close clearances and reduces friction loss to a minimum. This is only one of many special processes which help to make Delco motors the outstanding choice of household appliance manufacturers. Delco Products Corporation, Dayton, Ohio.

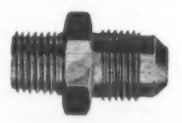
Made in Canada by the McKinnon Industries Ltd. St. Catharines, Ontario



DELCO MOTORS

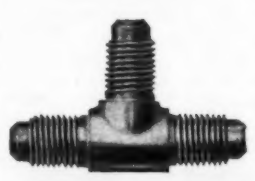
Protection

No. We do not sell barbed wire - - the protection provided through the use of Commonwealth Seepage Proof Fittings is intended for higher purposes than the corralling of cattle.



On the fittings used on automatic refrigeration installations depend the health and well-being of the users of these devices and we are, at all times, conscious of our obligation to provide Seepage-Proof Fittings "Built Right to Stay Tight".

Manufacturers, distributors, dealers and service-men have learned, through nearly three decades of usage, to depend upon Commonwealth Fittings.



All sizes, all styles in standard fittings. Hundreds of semi-standard shapes in stock for immediate shipment. Specials made for any purpose. Send sample, blueprint, or sketch for prompt quotation.

COMMONWEALTH BRASS CORPORATION
Commonwealth Ave. at G.T.R.R.
DETROIT, MICHIGAN

Buckeye

Domestic Industries, Inc., Mansfield, Ohio.

Cabinet—Phillip's Pump and Tank Co. 1-door cabinet, wood frame, wood breaker strip, rubber gasket. Thermocraft insulation, top 2 in., side and door, 3 in., bottom, 2 ¾ in. Stamped brass chromium-plated hardware.

Compressor—Open-type reciprocating 1-cylinder Dayton compressor with 1⅝-in. bore and 1-in. stroke, belt driven at 600 r.p.m. Compressor above food compartment. Refrigerant charge, 2 lbs.

Evaporator—Mullins shell-type seal evaporator, finished in black porcelain. Capillary tube control. Anodically treated aluminum ice cube trays.

Control—Ranco manual temperature control. Wide cycle defrosting.

Motor—Emerson capacitor-start motor Oil every six months.

Condenser—Bush or McCord fan-cooled fin tube condenser.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
600	6.0	$.....	100	1/6	SO_2	365	L 56¾ x 27½ x 22½ P	10.0	3	5	105	...

Coldspot

Sears, Roebuck & Co., Chicago, Ill.

Cabinet—Models 104-T and 216-Y, Seeger cabinet. All models 1 door. Wood frame, Bakelite breaker strip, rubber gasket. Dry-Zero insulation 2 in. throughout for model 104-T, 3 in. thick throughout for all other models. National Lock Co. die-stamped chromium-plated brass hardware.

Compressor—Sunbeam open-type 4-blade rotary compressor, direct driven at 1,725 r.p.m. Bellows shaft seal. Compressor above food compartment. Refrigerant charge—model 104-T, 1½ lbs.; models 216-Y and 326-Y, 1¾ lbs.; model 328-Z, 2 lbs. Lubrication—1 pt. White Mineral oil.

Control—G-E adjustable temperature control, semi-automatic defrosting, vacation setting. Nine freezing speeds.

Motor—Delco, G-E, and Emerson motors, capacitor start. Oil every six months.

Evaporator—Shell and tube evaporator, brass sheet, copper tube. Thermostatic control. Detroit Lubricator expansion valve. Anodically treated aluminum ice cube trays.

Condenser—Bush fan-cooled fin tube.

MODEL NO.	CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
104-T	4.2	$.....	120	1/6	SO_2	228	D 51¼ x 23⅞ x 23½ P 27¼ x 19½ x 15	9.3	3	2	64	5
216-Y	6.2	.....	150	1/5	SO_2	321	D 58¼ x 30 x 26 P 32 x 23⅝ x 15⅝	13.1	5	5	105	7½
326-Y	6.2	.....	150	1/5	SO_2	352	P 58¼ x 30 x 26 P 32 x 23⅝ x 15⅝	13.1	5	5	105	7½
328-Z	8.1	.....	180	1/4	SO_2	415	P 62¾ x 33⅝ x 26¼ P 35⅞ x 27¼ x 15⅝	17.83	6	5	138	10½

Dayton

Heinz & Munschauer, Buffalo, N. Y.

Cabinet—Heinz & Munschauer 1-door cabinet for all models except 8-C-4 which has a 2-door cabinet. Bakelite breaker strip, Miller rubber gasket. Balsam Wool insulation 2 in. throughout for model 434, 3 in. thick throughout on all other models. Winters & Crampton chromium-plated hardware.

Compressor—Open-type 1-cylinder reciprocating compressor, belt driven at 800 r.p.m. Bore, 1⅛ in.; stroke, 1¼ in. Compressor below food compartment. Refrigerant charge—model 6-C-3, 4 lbs. 6 oz.; model 7-C-4 and 8-C-4, 5 lbs.; all others, 3 lbs. 6 oz. Lubrication, 1⅓ pts. Suniso No. 3.

Control—Ranco manual temperature control with defroster.

Motor—Leland capacitor or repulsion-induction motor. Oil every 3 months.

Evaporator—Mullins shell-type, steel finished in porcelain. Low side float control. Aluminum trays, Flexotray optional.

Condenser—McCord fan-cooled fin tube.

MODEL NO.	NET CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
434	4.0	$.....	85	1/6	SO_2	280	L 50 x 23½ x 23 P 26¼ x 18 x 15¼	8.0	3	2	56	5
5-C-2	5.02	.....	85	1/6	SO_2	330	L 56 x 24½ x 24½ P 29½ x 18½ x 17⅜	10.53	6	2	56	5
6-C-3	6.03	.....	85	1/6	SO_2	365	L 56 x 28½ x 24½ P 29½ x 22½ x 17⅜	12.83	6	3	84	7½
7-C-4	7.04	.....	85	1/6	SO_2	385	L 56 x 31⅞ x 24½ P 29½ x 25⅞ x 17⅜	15.08	7	4	112	10
8-C-4	8.04	.....	85	1/6	SO_2	410	L 56 x 35¼ x 24½ P 29½ x 29¼ x 17⅜	15.83	8	4	112	10

Gilfillan

Gilfillan Bros., Inc., Los Angeles, Calif.

Cabinet—Seeger 1-door cabinet, wood frame, Textolite breaker strip, Goodyear rubber gasket. Thermocraft insulation model 5-X 2 in. throughout, model 6-X, 2½ in. throughout, model 7-X, 3 in. throughout, model 50, 2 in. throughout, model 70, 3 in. for all surfaces except top which has 2¼ in. Chromium-plated Winters and Crampton hardware.

Compressor—Gilfillan 1-cylinder open-type reciprocating compressor belt-driven with compressor speed 625 r.p.m. Bore 1¼ in., stroke ⅞ in. Cooke rotary seal. Compressor below food compartment. Refrigerant charge—2 lbs. Lubrication—12 oz. Sinclair oil.

Motor—G-E capacitor motor. Oil yearly.

Evaporator—Gilfillan continuous figure 8 copper tubing. Thermostatic control. Mayson expansion valve. Aluminum and stainless steel ice trays, some metal-flex.

Control—G-E automatic temperature control. Manual defrosting with automatic reset.

Condenser—Bush fan-cooled radiator-type condenser.

Guarantee—System and cabinet, 1 year. Serviced by dealers only.

Special features—Electric light, foot pedal door opener, auto belt tightener.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
5-X	4.20	$129.50	125	1/6	SO_2	340	D 54¾ x 25½ x 21½ P 27½ x 20½ x 15	9.61	3	2	56	5
6-X	5.33	149.50	125	1/6	SO_2	360	D 58⅛ x 26½ x 23 P 30 x 22½ x 16	13.60	5	3	84	7½
7-X	6.30	179.50	125	1/6	SO_2	380	D 60¾ x 30½ x 23 P 32 x 24 x 16	14.45	4	4	112	10
50	4.00	99.50	125	1/6	SO_2	330	D 52¾ x 23⅞ x 21½ P 26¾ x 19½ x 15½	9.08	3	2	56	5
70	6.15	144.50	125	1/6	SO_2	370	D 58¾ x 30½ x 24 P 31⅞ x 24 x 16	13.50	5	3	84	7½

Hostess

Hostess Corp., Ltd., Toronto, Ont., Can.

Cabinet—Hostess 1-door cabinet, wood frame. Bakelite breaker strip, rubber gasket. Hinde & Dauche insulation. In models 405 and 505—top and sides 2¾ in., back 2⅜ in., door 2½ in., bottom 3½ in.; model 605 and 514—top 3⅛ in. sides and back 3 in., door 2⅞ in., bottom 3½ in.; models 705 and 714—top and back 3⅛ in., sides 3⅜ in., door 3¼ in., bottom 4 in. Winters & Crampton chrome-plated hardware.

Compressor—Hermetically sealed rotary compressor, direct driven at 1760 r.p.m. Compressor below food compartment. Refrigerant charge—3 lbs. Lubrication—⅛ gal.

Condenser—Hostess natural draft fin tube condenser.

Evaporator—Hostess copper and brass evaporator, soldered with electro-tin finish. Low pressure float control. Aluminum tray. Ice tray release.

Motor—G-E capacitor motor.

Control—Cutler-Hammer 9-point automatic temperature control. Automatic self defrosting.

Guarantee—System, 1 and 3 years; cabinet 1 year. Service by dealers only.

Special Features—Servador (on inside of door). Self defrosting—operates without manual attention and with cabinet temperature variance approximately 3°. Controlled humidity—maintains high moisture content in food compartment.

MODEL NO.	CU. FT.	F.O.B. PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
405	4.9	$186.00	100	1/6	SO_2	350	L 50¾ x 25¾ x 25⅝ P 26⅛ x 19¾ x 18⅛	10.0	4	2	63	4¼
505	4.5	196.00	100	1/6	SO_2	380	L 50¾ x 25¾ x 25⅝ P 26⅛ x 19¾ x 18⅛	9.2	4	2	63	4¼
605	5.7	236.00	100	1/6	SO_2	405	L 54 x 28 x 24½ P 30½ x 21⅝ x 18¼	10.8	4	2	63	4¼
705	6.7	265.00	100	1/6	SO_2	440	L 57½ x 29⅞ x 25¼ P 31¾ x 23 x 18¾	11.9	4	3	84	5½
514	5.0	236.00	100	1/6	SO_2	395	L 54¾ x 29¼ x 25⅜ P 26¼ x 22¾ x 17¾	....	4	2	63	4¼
714	6.7	268.00	100	1/6	SO_2	430	L 59 x 32⅝ x 27 P 28½ x 24¾ x 18⅝	....	4	3	84	5½

Icemaster

Icemaster Co., Haverhill, Mass.

Cabinet—Seeger 1-door cabinet. Insulation thickness—model P5, 2½ in. throughout; all others 3 in. throughout. Chrome-finished hardware.

Compressor—Open type reciprocating 1-cylinder, belt driven at 450 r.p.m. with 1⅝-in. bore, 1⅜-in. stroke. Bellows shaft seal. Compressor below food compartment. Refrigerant charge—1½ lbs. Lubrication—1½ pts.

Control—Ranco automatic temperature control with manual defrosting.

Evaporator—Fedders coil-on-sleeve copper evaporator. Thermostatic control. Detroit Lubricator expansion valves. Aluminum trays, with 1 rubber tray.

Motor—Wagner and Century repulsion-induction motor. Oil every 6 months.

Condenser—Bush fan-cooled fin tube condenser.

Guarantee—System and cabinet, 1 year. Serviced by dealers and independent service men.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
P-5	5.0	$200.00	125	1/6	CH_3Cl	290	P or D 60¼ x 26½ x 22 P	12.5	6	2	72	6
P-6	6.0	225.00	125	1/6	CH_3Cl	325	P or D 63½ x 30½ x 22 P	13.0	6	3	96	8
P-7	7.5	250.00	125	1/6	CH_3Cl	350	P or D 63½ x 34 x 23 P	15.0	6	3	96	8

Jewett

Jewett Refrigerator Co., Buffalo, N. Y.

Cabinet—Jewett 1-door cabinet, wood frame, stainless steel breaker strip, rubber gasket. Thermocraft insulation 3 in. throughout on model 64; 2½-in. on all sides, and 3 in. in top on model 52. Grand Rapids Brass hardware, with dull chrome finish.

Compressor—Open-type reciprocating 1-cylinder Jomoco compressor with 1 5/16-in. bore and 1 3/16-in. stroke, belt driven at 500 r.p.m. Bellows shaft seal. Compressor located below food compartment. Refrigerant charge—24 oz. Lubrication—1 pt. Stanco.

Control — Cutler-Hammer temperature control, non-adjustable by user, wide cycle defrosting, vacation setting. Control is fitted with an electric light.

Evaporator—Jewett shell-type copper evaporator with thermostatic control. Mayson expansion valve. Aluminum and rubber ice cube trays.

Motor—Century capacitor motor. Oil every six months.

Condenser—Bush fan-cooled fin tube condenser.

Guarantee—System and cabinet, 1 year. Service by dealers and independent service firms.

Special features—Double depth ice cube trays. Adjustable shelves, permitting spacing every ½ in. Black porcelain baffle on front of evaporator, with chromium door. Electric light.

MODEL NO.	NET CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
52	4.6	$.....	105	1/6	SO_2	430	L 55½ x 28¼ x 22¼ P 28 x 19 x 17	9.7	3	2	56	5.17
64	5.8	$.....	105	1/6	SO_2	380	L 51½ x 25¼ x 21¼ P 31 x 21 x 17½	13.2	4	3	112	10.34

Universal

Landers, Frary & Clark
New Britain, Conn.

Cabinet—Seeger 1-door cabinet, steel and wood frame, Bakelite breaker strip, rubber gasket. Multicell insulation in doors on all models, 2¼ in.; in top, sides and bottom—model 445, 2¼ in.; model 456, 2¾ in.; all others, 3¼ in. Chromium-plated hardware.

Compressor—Open-type rotary Landers Frary and Clark compressor. Compressor speed—models 445, 456, 467, and 867, 650 r.p.m.; all others, 850 r.p.m. Belt drive. Bellows shaft seal. Compressor below food compartment. Refrigerant charge—3¾ to 4¾ lbs. Lubrication—1 lb. Landers Frary and Clark special.

Control—Ranco or Cutler-Hammer automatic adjustable temperature control. Semi-automatic defrosting.

Evaporator—Mullins evaporator, porcelain finished. Flooded system, low side float. Anodically treated aluminum ice cube trays.

Motor—Delco. Oil every six months.

Condenser—Bush fan-cooled fin tube condenser.

Guarantee—System and cabinet 1 year. Serviced by dealers and independent service firms.

MODEL NO.	CU. FT.	INSTALLED PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	NET WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
445	4.1	$124.50	120	1/6	SO_2	269	D 53½ x 25½ x 19¾ P 27½ x 19½ x 15	9.1	5	2	56	4
456	5.0	159.50	120	1/6	SO_2	298	D 56½ x 26½ x 21 P 29⅞ x 20½ x 16	10.8	5	3	84	6
467	6.0	189.50	120	1/6	SO_2	335	D 59¼ x 30½ x 21½ P 31½ x 23⅝ x 15½	11.7	5	3	84	6
478	7.0	219.50	150	1/4	SO_2	370	D 64⅛ x 30½ x 21½ P 36½ x 23⅝ x 15½	14.5	6	4	112	8
489	8.1	259.50	150	1/4	SO_2	405	D 59½ x 39 x 21½ P 31½ x 31⅞ x 15½	15.7	6	4	112	8
867	6.0	219.50	120	1/6	SO_2	360	P 59¼ x 30½ x 21½ P 31½ x 23⅝ x 15½	11.7	5	3	84	6
878	7.0	259.50	150	1/4	SO_2	385	P 64⅛ x 30½ x 21½ P 36½ x 23⅝ x 15½	14.5	6	4	112	8
889	8.1	309.50	150	1/4	SO_2	424	P 59½ x 39 x 21½ P 31½ x 31⅞ x 15½	15.7	6	4	112	8

Ward

Montgomery Ward & Co., Chicago, Ill.

Cabinet—Leonard and Seeger 1-door cabinets, wood frame, Panelyte breaker strip, rubber gasket. Hermetex insulation, model L-7500 and L-6500, 2½ in. throughout; model S-550 2½in. throughout; model S-400 top, sides, back, and bottom, 2 in., door, 2½ in. Die-cast chrome-plated hardware on models L-6500 and L-7500. Flat surface, stamped brass nickle plated on models S-400 and S-550.

Compressor—Universal Cooler open-type reciprocating compressor. Models L7500 and L6500, 2 cylinders; all others 1 cylinder. Belt-driven with compressor speed 387 r.p.m. Bore 1½ in., stroke 1¼ in. Bellows shaft seal. Compressor below food compartment. Refrigerant charge—1¼ lbs. maximum. Lubrication—1¼ pts. Methyl oil.

Evaporator—Universal Cooler wrapped coil copper evaporator. Thermostatic control. Detroit Lubricator expansion valve. Aluminum and rubber ice cube trays. Ice cube tray release.

Control—Tagliabue automatic temperature control with manual defrosting.

Motor—Delco capacitor-start motor. Oil every year.

Condenser—Long fan-cooled square fin condenser.

Guarantee—System and cabinet, 1 year. Serviced by Montgomery Ward only.

Special Features—Model L7500 and L6500 rearranging tray and classified food storage system. All Deluxe models—electric light and shelf-X.

MODEL NO.	CU. FT.	INSTALLED *PRICE	I.M.E. LBS.	MOTOR HP.	REFRIG-ERANT	SHIPPING WEIGHT	FINISH: D—DULUX, P—PORCELAIN, L—LACQUER EXTERIOR—CABINET DIMENSIONS—INTERIOR	SHELVES SQ. FT.	NO. OF SHELVES	ICE TRAYS	NO. OF CUBES	WEIGHT IN LBS.
S-400	4.1	$ 89.95	94	1/6	CH_3Cl	270	D 50¼ x 23⅞ x 20½ P 26¾ x 18⅞ x 15½	7.5	3	3	54	4
S-550	5.65	107.95	94	1/6	CH_3Cl	310	D 53¼ x 27⅜ x 23½ P 29¼ x 20⅞ x 17⅛	11.0	4	3	63	5
L-6500	6.35	144.95	175	1/5	CH_3Cl	400	L 56⅞ x 28¼ x 22¾ P 29½ x 22⅛ x 18⅜	13.65	4	3	84	6½
L-7500	7.44	159.95	175	1/5	CH_3Cl	430	L 57⅛ x 31½ x 22¾ P 30¼ x 25¼ x 18⅜	16.25	6	4	112	9

*Zone 1.

COMMERCIAL REFRIGERATION

Kelvinator Develops New Water Cooler

DETROIT — Designed especially for use in bakeries, laundries, and other places with high room temperatures, a new model water cooler is being made by Kelvinator Corp. It is known as model WCW-8.

The new model is of the faucet type and has a capacity of 8 gallons of water per hour, providing an ample supply of cooled water for places with excessive temperature or where workers fill containers with water to keep near their work.

The condensing unit with solenoid water valve is water cooled, using a double-tube condenser, and is not affected by high temperatures or dust and lint in the air.

Outside dimensions of the new water cooler are: width 21¼ inches, depth 24⅞ inches, height 43 5/16 inches.

The cabinet is of steel construction finished with one coat of clear lacquer over two coats of golden bronze.

Insulation of the cooling unit is three inches around sides and bottom and two inches at top. The cold water lines also are thoroughly insulated.

The cooling unit is of special Kelvinator design with sleeve type direct cooling. It has approximately three quarts storage capacity.

Refrigerant in the new water cooler is controlled by a high side float valve.

The condensing unit is powered with a ¼-hp. motor.

A self closing, artistic, chromium plated, push-in type faucet is arranged for one-hand operation. The waste receptor is chromium plated brass with an integral splash guard. An auxiliary outlet is provided at the rear of the cabinet for remote connection. All water connections are accessible from the back of the cabinet.

Russ Adds Walk-In Keg Cooler to Beer Line

CLEVELAND — The Russ Soda Fountain Co. has added a walk-in keg cooler to its line of beer dispensing equipment, which completes the line from keg cooler to the bar.

Featured in the keg cooler is the knock-down bolted assembly which simplifies installation. This also enables the purchaser to move the cooler from one location to another. Models No. F-66 and F-612 have a capacity for nine half barrels of beer without stacking, and models No. F-1010 and 1016 hold about 15 kegs.

Self-Contained Bottle Beverage Cooler Built by G-E

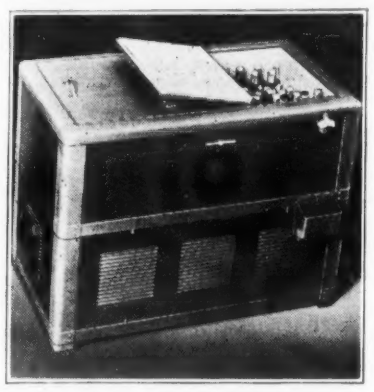
CLEVELAND — Specialty appliance sales department of General Electric Co. has just introduced a G-E bottled beverage cooler, reports Walter E. Landmesser, head of the department's commercial division.

Production now is under way at General Electric Co.'s Fort Wayne factory. Shipments will start immediately.

The cooler is self contained, quiet, and economical in operation. The cabinet is constructed entirely of steel.

Lower half of the cabinet forms a housing for the condensing unit as well as affording storage space for one case of bottles. The top of the cabinet is formed to provide two large hinged doors covering the cooling tank in which bottles are cooled by immersion in water.

New G-E Product



G-E self-contained bottle cooler.

The cooling unit, which rests in the bottom of the tank, is made of copper tubing formed into a zig-zag coil covering the entire bottom of the tank. It is possible to use the beverage cooler to supply cooled drinking water, by adding a water cooling coil.

Four types of water fixtures also are available for use with the cooling unit—plain bubbler, combination bubbler and glass filler, glass filler and push-button spigot.

The condensing unit is a standard G-E commercial unit modified to adapt it to beverage cooling service. The compressor is of the two-cylinder, belt-driven reciprocating type.

Frigidaire's Ten-hp. Freon Unit Handles Hardening Room Job

DETROIT—One of the largest installations of a Freon refrigeration system for an ice cream plant ever to be made is claimed for the installation made for the hardening room of the Fred Sanders Co. ice cream plant here by Refrigeration Sales Corp., Frigidaire commercial representative in this area.

As described by John R. Miller, president of Refrigeration Sales Corp., the installation consists of a Frigidair 10-hp. Freon unit used to harden 500 gal. of brick ice cream daily.

Regular pipe coils are used to cool down the rooms to a temperature of —10° F. The pipe coils are used like shelves, so that the installation is, in effect, one greatly enlarged household refrigerator evaporator.

That the Freon unit was of ample capacity to maintain the temperature of —10° F. in the 20x20 ft. room was demonstrated by the fact that temperatures of —15° F. were maintained at first, but this made the ice cream too hard for satisfactory operation of the slicing machines.

Another room in Sanders' plant cooled by Frigidaire is a 50x20 ft. room, divided into two sections, one for the storage of baking and cookie mixtures, and the other for candy.

Frigidaire forced-convection cooling units, two to each section, are employed in this installation. The blowers in the forced-convection units are controllable from a rheostat.

G-E Equipment Will Be Used in Three Banana Ripening Rooms

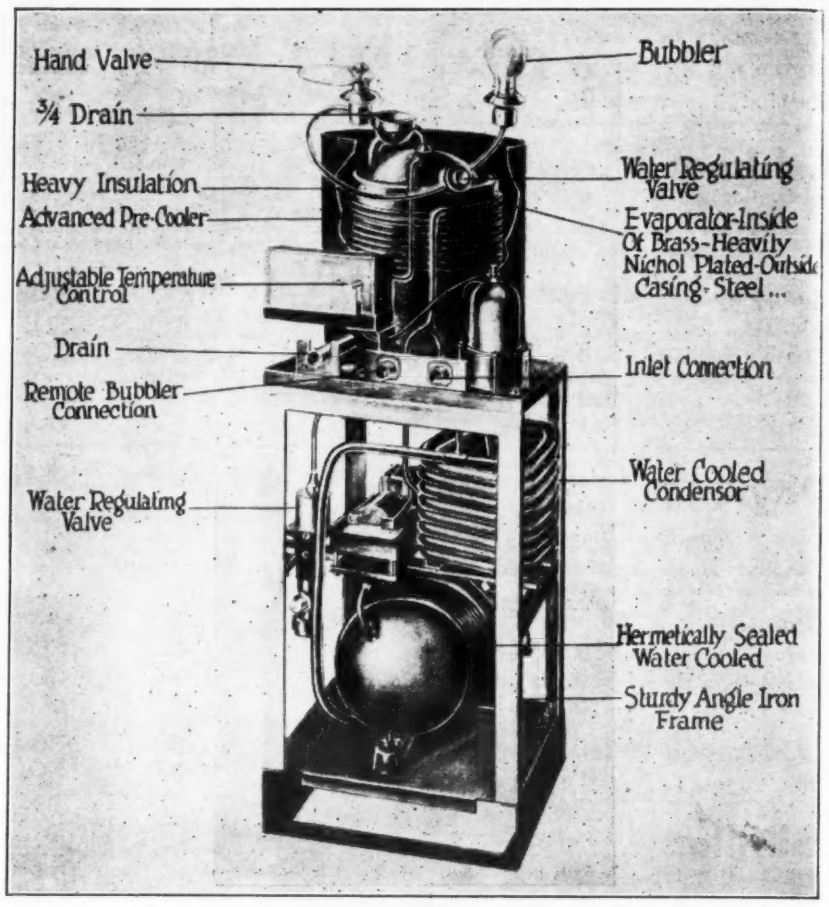
LOS ANGELES—Louis Fix of the commercial department of the George Belsey Co., G-E distributor for Los Angeles, sold the Independent Banana Distributors of Los Angeles a CM-9W 10-hp. G-E condensing unit and three EC-20 conditioned-air evaporators—one suspended in the center of each room—for use in ripening bananas.

Each of the evaporators is equivalent to 2 tons of melting ice. With this equipment a temperature of 56° F. is maintained in each room. One of the rooms is fitted with valve adjustments so that the temperature may be regulated to permit the ripening of bananas at an earlier period if the fruit is needed for the market.

60 Kelvinator Coolers Sold in Baltimore

BALTIMORE—The commercial division of Southern Wholesalers, Inc., Kelvinator distributor for this territory, recently sold 60 Kelvinator beverage coolers to a Baltimore soft drink distributor. The order totaled $13,800.

1935 Westinghouse Water Cooler



Cutaway picture of a new Westinghouse water cooler, showing new method of pre-cooling, whereby the incoming water lines are wrapped around the outside of the evaporator shell to take advantage of the cold produced on the outside of the evaporator shell. The water then goes into the evaporator itself to get its final cooling.

Ice-Maker Evaporators Introduced by Fedders

BUFFALO, N. Y.—Just introduced by Fedders Mfg. Co. is a new line of finned evaporators made in 2 to 8-tray sizes, together with a new series of 6 to 8-tray finned evaporators, to meet the demand for combined ice cube making and heavy duty cooling for commercial refrigerators, back bars, etc.

These new "DF" and "FCF" models, as they are known, are sold as complete lowsides including Fedders thermostatic expansion valves and ice cube trays as standard equipment. They are arranged for either bottom or top refrigerant feed, with connections mounted on top of the evaporator.

The evaporators are made of copper and brass throughout. Continuous ½-in. seamless copper tubing is used on all models, thus providing continuous refrigerant flow from inlet to outlet and eliminating all possibility of oil pockets. Adjustable hangers are furnished at extra cost.

"DF" models are equipped with 27-cube trays and "FCF" models have 36-cube trays.

Central Brass Develops New Remote Bubbler For Water Coolers

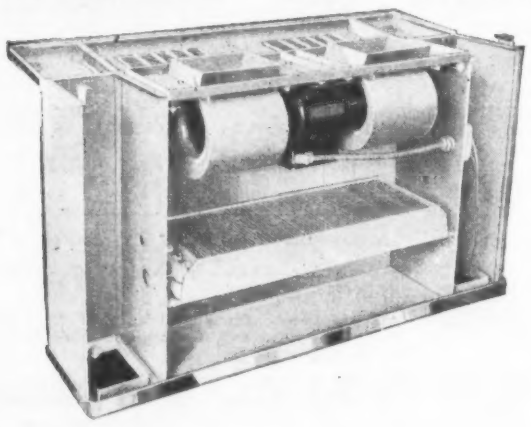
CLEVELAND—Central Brass Mfg. Co. here has developed a modern remote bubbler for use with central-type water cooler systems.

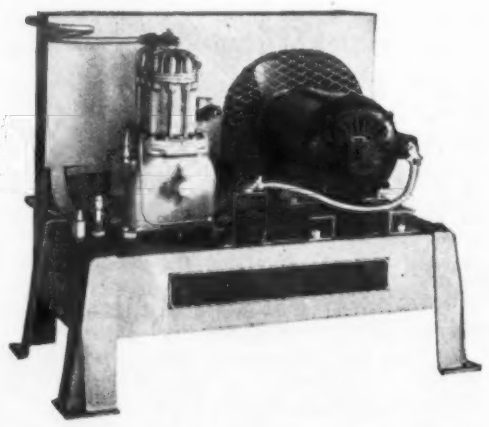
Angle stream of this new bubbler is designed to meet the requirements of sanitary codes. Body of the bubbler is cast iron with bronze finish. All brass parts are chrome finish. Felt covering is provided on valves inside the bubbler body to absorb condensation.

The bubbler bowl is vitreous enameled. A 6 inch round Monel or chrome brass bowl is available if desired. A special screen is placed in the bubbler bowl to prevent splashing.

Water control handle is self-closing with ball-bearings. The handles use the patented Samson lock for convenient adjustment. The bubbler stream adjustment is provided with an automatic stream control valve which also maintains the stream at an even height regardless of a change in water pressure.

Motors for Air-Conditioning Systems





There is a Wagner motor exactly suited to meet your requirements

Regardless of your type of air-conditioning system, there is a Wagner motor ideally suited for operating it. Wagner motors are built to meet the starting and operating requirements of compressors, pumps, and air-movement devices.

The Wagner line includes all types of motors generally applied on air-conditioning machinery, making it possible for you to completely equip your apparatus with Wagner motors. Whether alternating or direct current; single or polyphase; open, drip-proof, or totally-enclosed; rigid or resilient-mounted—there's a Wagner motor now in existence, ready to be applied on the job.

Wagner motors are chosen by leading manufacturers of air-conditioning systems because of their dependability, long-life qualities, excellent performance, and their 18 years of successful service in the refrigeration industry.

On your next air-conditioning design or installation problem—consult Wagner. Wagner's experience will be helpful. Descriptive literature will be sent upon request.

M335-1B

MOTORS
TRANS-FORMERS

Wagner Electric Corporation
6400 Plymouth Avenue, Saint Louis, U.S.A.

FANS
BRAKES

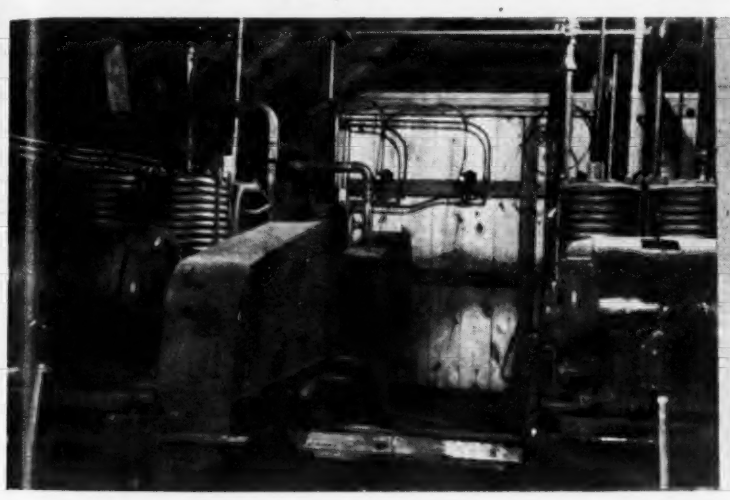
ANSUL
SULPHUR DIOXIDE
METHYL CHLORIDE

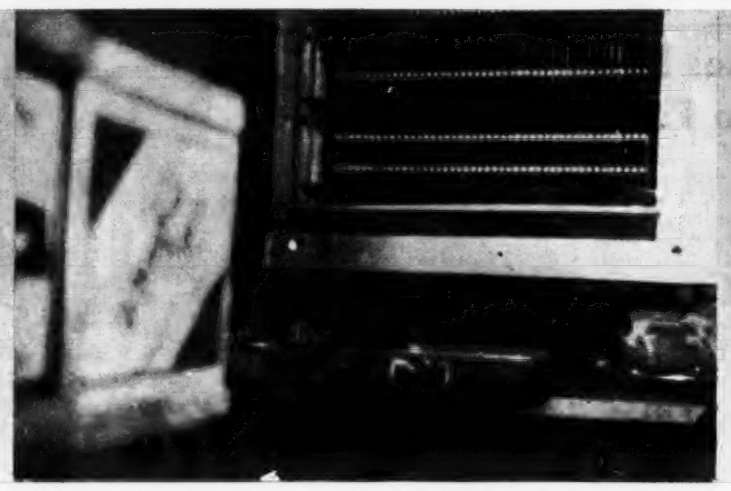
DEPENDABILITY PROVED BY EXPERIENCE

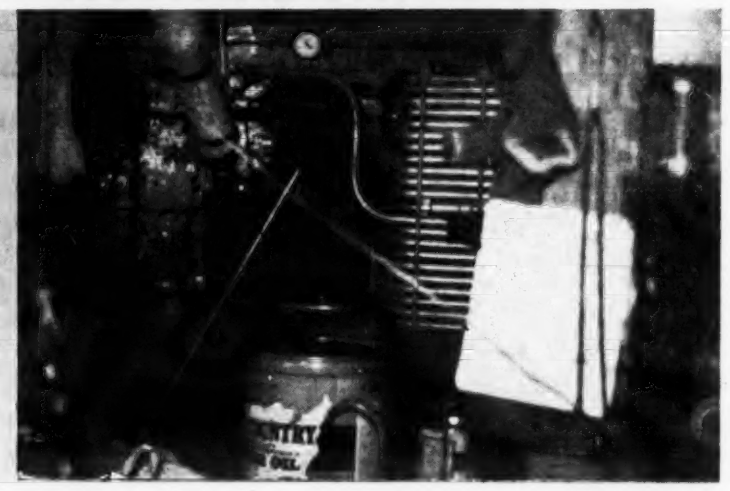
Service men and manufacturers of automatic refrigerators have proved the dependability of Ansul Sulphur Dioxide and Ansul Methyl Chloride. Their experience has shown that Ansul Refrigerants are of unvarying high quality . . . that they can be depended upon to provide satisfactory refrigeration service at all times. Let your experience be the judge. Specify Ansul Refrigerants for your next requirement.

ANSUL CHEMICAL COMPANY
MARINETTE » » » » » WISCONSIN

Refrigeration Equipment Used for Many Purposes in Jack Dempsey's New York Restaurant







These photographs of the installation of Frick equipment made in Jack Dempsey's restaurant were taken by the editor shortly before completion of the job. (1) Four 15-hp. machines for air-conditioning work mounted on cork isolated steel beams in the attic. (2) A forced-convection cooling unit which refrigerates a walk-in box in the kitchen. (3) A 3-hp. condensing unit which supplies refrigeration for a walk-in box with six compartments, a chef's box in the kitchen, and another three-compartment walk-in cooler for meats, dairy products, and beer storage.

Frigidaire Installs Bar Equipment In Night Club

DETROIT—One of the most complete installations of refrigeration equipment for a night club to be made in these parts has just been completed for Joey's Stables here by Refrigeration Sales Corp., Frigidaire commercial representative in the Detroit area.

The 3-hp. Frigidaire condensing unit installed supplies refrigeration for a draft beer cooling station, beer pre-cooler, a cocktail bar, an ice maker, and two reach-in refrigerators.

Liquid-Zahm Beer Cooler

The draft beer cooling station is made up of a combination of a Frigidaire instantaneous draft beer cooler, and two Liquid-Zahm system dispensers.

All three parts of this arrangement are located in an insulated cabinet, the Frigidaire BW3X cooler chilling the beer before it goes into the Liquid-Zahm dispensers, cold temperatures being held in the dispenser by a coil wrapped around the inner tank.

Two kinds of beer, drinking water, and seltzer water are cooled by this system.

Frigidaire diamond-fin coils are used in the beer pre-cooler.

Bottled beer is cooled by a coil in the cocktail bar.

Reach-In Refrigerators

Two reach-in refrigerators, one 7x6 ft. and the other 5x6 ft., are placed in the kitchen.

The back-bar is cooled by an ice making coil with a capacity of 23 lbs. of ice per freezing.

Individual refrigerant lines are run to each different type of equipment. The line from the ice maker is fitted with a check valve to keep the gas returning from the other parts of the system from backing up into the ice making coil.

Lipman & Fedders Equip Texas Packing House

EAGLE LAKE, Tex. — Way Engineering Co., Houston, recently installed refrigeration equipment for Colley & Thomas Bros., local packing house.

Two of the four model 202 Lipman machines installed are connected with two Fedders cooling units in the chill room, and two are connected to the Fedders coils in the storage room. Both rooms are 12x20x12.

Glass-Enclosed 'Coolers' Feature of Installation In Jack Dempsey's

NEW YORK CITY—Jack Dempsey's newly opened restaurant at 8th Ave. and 50th St. here has drawn the attention of the general public because of the crowds it has drawn and the notices it has received in the "gossip" columns—but it holds another interest for those in the refrigeration industry because of its large and unusual installation of refrigeration equipment.

The Automatic Refrigerating Co., Frick distributor, has installed a total of nine low pressure condensing units in this establishment, five of the machines being required for air-conditioning work.

Three Display Rooms

Outstanding feature of the whole restaurant is the series of refrigerated display rooms, enclosed in enormous plate-glass windows, which take the place of walls.

There are three such rooms, two facing the street on one side and the dining room on the other, permitting people on the sidewalk to see both the interior of the cold space and the patrons in the restaurant.

One of these display rooms contains the stock of wines and beverages, while the other holds the fancy cuts of first quality meats.

'Cold Diffusers' Hold Temperatures

The third display window is on the second floor, and offers to patrons at the tables an appealing arrangement of fresh fruits and vegetables.

The wine display room, measuring about 12x14 ft., is held at 50° F. and this meat display room, of similar size, at 35° F. by a 5-hp. unit which also cools two small boxes in the bar. The display rooms are cooled with "cold diffusers."

Another 3-hp. machine cools a walk-in box having six compartments, a chef's box in the kitchen, and a 3-compartment walk-in box for meats, dairy, and beer storage.

A 1½-hp. unit cools the vegetable box, while a separate 1-hp. machine holds the display window for vegetables on the mezzanine floor. This window is equipped with very powerful lights, in spite of which it must be held at 38° F.

Four of the machines used for air conditioning are mounted on cork isolated steel beams in the attic, and serve to cool the air for the office, restaurant, and cocktail room. The fifth machine supplies cool air to the bar, the conditioning unit being located over the entrance door.

The four 15-hp. machines in the attic are connected to direct expansion coils into which the air is drawn after passing through replaceable glasswool filters.

A 3-hp. motor drives the main fan, which handles approximately 10,000 cu. ft. of air per minute.

There are two sets of heating coils placed alongside the cooling coils, these being fed with steam under automatic control, when required.

The conditioned air enters the restaurant through narrow grilles near the ceiling along one side, and passes across the room to the kitchen and to various exhaust ducts, one of which is located in the steak grill compartment. This opens directly into the dining room, so that the chef, with his meat block and charcoal-fired broiler, is in full view of the patrons.

The air is exhausted by fans in the kitchens and lavatories, some 8,000 or 9,000 c.f.m. being taken out by the kitchen fan alone. This fan is placed above the stove canopy.

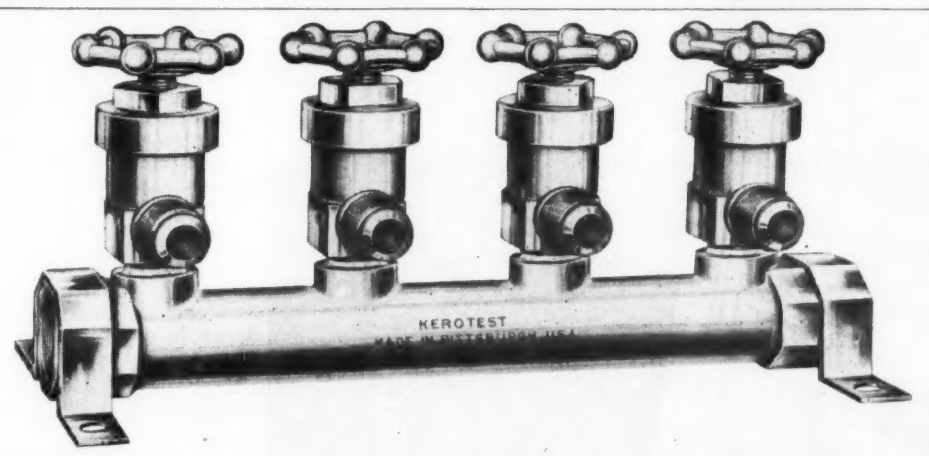
The cooled space is held about 10° F. below the outside temperature; the inside humidity varies between 50 and 55 per cent.

3 Hussmann Cases Are Shipped to Jamaica

ST. LOUIS—Three model DX508-8 ft. "Humid-I-Coiled" Hussmann-Ligonier display and storage cases, to be operated in connection with Kelvinator equipment, were recently shipped to Kingston, Jamaica, by the Allied Store Utilities Co. of this city, manufacturer of Hussmann-Ligonier refrigerators, reports T. R. Strupel, sales department.

Preserving Choice Fowl & Meats

The General Electric evaporator shown in the upper right hand corner is providing proper temperatures for fowl and meats in this storage room in the Hotel Great Northern in New York City.



KEROTEST MANIFOLDS

of cadmium plated Forged Steel are ideal for large commercial refrigeration installations

LOCAL REPRESENTATIVES
(Stocks Maintained for Immediate Delivery)

Albany, N. Y., 39 Columbia St.	Hoy & Co., Inc.
Atlanta, Ga., 285 Marietta St.	J. M. Tull Metal & Supply Co., Inc.
Baltimore, Md., 108 South St.	Clendenin Bros., Inc.
Bangor, Me.	Utilities Distributors, Inc.
Boston, Mass., 145 High St.	A. E. Borden Co.
Bridgeport, Conn., 31-35 E. Washington	Parsons Brothers
Brooklyn, N. Y., 955 Third St.	Coleman Electrical Supply Co., Inc.
Buffalo, N. Y., 64 Peabody St.	Root Neal & Co.
Cambridge, Mass., 614 Memorial Drive	Melchior, Armstrong, Dessau Co., Inc.
Chicago, Ill., 5733 West Chicago Ave.	Refrigeration Equipment & Supply Co.
Chicago, Ill., 2334-38 So. Michigan Ave.	H. W. Blythe Co.
Chicago, Ill., 1228 Belmont Ave.	Max A. R. Matthews
Cincinnati, Ohio, Burbank St.	Merkel Bros. Co.
Cincinnati, Ohio, 2118 Spring Grove Ave.	Williams & Co., Inc.
Cleveland, Ohio, 1748 E. 22nd St.	Williams & Co., Inc.
Dallas, Texas, Jackson & Pearl Sts.	The Electromotive Company
Davenport, Iowa, 116 East First St.	Republic Electric Company
Denver, Colo., 14th at Lawrence	The Auto Equipment Co.
Des Moines, Iowa, W. 11th & D.M.U.R.R.	C. L. Percival Co.
Detroit, Mich., 1203 Stanley Ave.	J. M. Oberc, Inc.
Fernwood, Miss., 711 N. Tangipahoa St.	Enochs Sales Co.
Greensboro, N. C., 714 W. Market St.	Home Appliance Service Co.
Honolulu, Hawaii	Theo. H. Davies & Co., Ltd.
Houston, Texas, 306 M. & M. Bldg.	D. C. Lingo Co.
Indianapolis, Ind., 229 E. South St.	F. H. Langsenkamp Co.
Kansas City, Mo., 3033 Main St.	Forslund Pump & Machinery Co.
Long Beach, Calif., 1295 Gaviota St.	L. B. Marsh
Los Angeles, Calif., 3109 Beverley Blvd.	Refrigeration Service, Inc.
Macon, Ga., 131 Cotton Ave.	Lowe Electric Co.
Milwaukee, Wis., 512 N. Water St.	Chase Brass & Copper Co., Inc.
Minneapolis, Minn., 145 N. 10th St.	Chase Brass & Copper Co., Inc.
Minneapolis, Minn., 422 So. Seventh St.	Refrigeration & Industrial Supply Co., Inc.
Montreal, Que., Canada, 637 Craig St.	Railway & Engineering Specialties Ltd.
Newark, N. J., Jefferson & Chestnut Sts.	McIntire Connector Co.
New Orleans, La., 805 Howard Ave.	Enochs Sales Co.
New York, N. Y., 300 Fourth Ave.	Melchior, Armstrong, Dessau Co., Inc.
New York, N. Y., 43 Warren St.	Paramount Electrical Supply Co., Inc.
New York, N. Y., 407 East 152nd St.	Aetna Supply Co.
Norfolk, Va., 767 Granby St.	Odry-Sutton Electric Co., Inc.
Oklahoma City, Okla., 100 East Main St.	Mideke Supply Company
Philadelphia, Pa., 1516 Callowhill St.	Melchior, Armstrong, Dessau Co., Inc.
Pittsburgh, Pa., 901 Pennsylvania Ave.	Williams & Co., Inc.
Portland, Ore., 200 No. 13th St.	Harrison Sales Co.
Providence, R. I., 156 W. Exchange St.	Rhode Island Supply & Engineering Co.
Rochester, N. Y., 91 Mt. Hope Ave.	Ontario Metal Supply, Inc.
San Francisco, Calif., 1077 Mission St.	California Refrigerator Co.
San Francisco, Calif., 380 Brannan St.	Refrigerating & Power Specialties Co.
Seattle, Wash., 314 Ninth Ave., No.	Harrison Sales Co.
Sioux City, Iowa, 2310 E. Eighth St.	National Refrigeration Service
Springfield, Mass., 576 Main St.	Home Utilities Service Supplies Co.
St. Louis, Mo., 3337 Market St.	The Spangler Company
Syracuse, N. Y., 314 W. Fayette St.	Syracuse Supply Co.
Toronto, Ont., Canada, 82 Ontario St.	Railway & Engineering Specialties, Ltd.
Vancouver, B. C., Canada	Fleck Bros., Limited
Waterloo, Iowa	Winterbottom Supply Co.

FACTORY REPRESENTATIVES

Buffalo, N. Y.	T. F. Wilson, 204 Sanders Road.
Chicago, Ill.	G. C. Taylor, 1342 Washington Blvd. (Local Stock)
Dallas, Texas	Clarence E. Boren, 215 So. Pearl St.
Dayton, Ohio	E. J. Kimm, 257 Springbrook Blvd.
Denver, Colo.	Robert L. Chambers, 1210 California St.
Los Angeles, Calif.	Van D. Clothier, 1015 E. Sixteenth St. (Local Stock)
New York, N. Y.	K. M. Newcum, 806 Graybar Building.
San Francisco, Calif.	A. W. V. Johnson, Merchant Exchange Bldg. (Local Stock)
St. Louis, Mo.	Robert H. Spangler, 3337 Market St.
Waterloo, Iowa	Austin Jones, 1127 W. 4th St.
Detroit, Mich.	Thomas B. McLaughlin, 18618 Santa Rosa Drive.

FOREIGN REPRESENTATIVES

Australia	F. C. Lovelock, Ltd., 235 Clarence St., Sydney, N.S.W.
Europe and South America	Melchior, Armstrong Dessau Co., Inc.
Puerto Rico	Refrigeration Supply Co. P. O. Box 328 Puerta de Tierra, San Juan.

REFRIGERATION engineers will welcome the unusual qualities of these new large sized Kerotest Manifolds . . . made of cadmium plated forged steel . . . guaranteed not to season-crack or split due to temperature changes or the wedging action of taper pipe threads. The ends are tapped with 3/4 in. or 1 in. female taper pipe thread, and the lateral valve openings 1/2 in. Female pipe.

These manifolds are fitted with cadmium plated heavy steel mounting straps that permit vertical or inclined mounting on one of the several flats of the octagon ends.

On such installations requiring large quantities of refrigerant, the use of Kerotest Diaphragm Packless Valves, fitted with handwheels, are especially recommended.

These valves are spaced on 3 in. centers and securely soldered in place and fully meet the requirements of the safety codes.

Write for special descriptive bulletin on Kerotest Refrigeration Manifolds.

KEROTEST MFG. CO.
Pittsburgh Pa.

KEROTEST

COMMERCIAL REFRIGERATION

Walk-In Cooler & Display Case Makes Best Combination for Store, McCray Man Finds

COLUMBUS, Ohio—That the combination of walk-in cooler and display case makes the best type of installation for many modern food stores is the opinion, gleaned from experience, of C. L. Murdock, Columbus branch manager for McCray Refrigerator Sales Corp.

"When we have a customer thinking of opening a new meat market," declares Mr. Murdock, "the first thing we hear is 'double-duty case.' We ask the prospect if he expects to do more than $175 worth of meat business per week. His answer usually is 'I certainly do.' Then we 'pound' cooler and case.

"I have convinced many by giving them my price book and having them place it in the bottom of the double duty case and then taking it out and placing it in the top of the case. I let them do this four or five times, then ask them to imagine how it would be to lift 40 or 50 lbs. of meat up and down several times a day.

"I then explain to them how much better meat will keep in a cooler and how much easier it is to walk in and out of the cooler."

Mr. Murdock states that a salesman on examination will find little difference in price between a double-duty case complete with refrigeration, and a combination cooler and a single-duty case complete with refrigeration.

Recent installations of coolers made by the Columbus branch include Square Deal Market, Galion, Ohio—a 102 cooler and 1512 case with complete refrigeration; George Trowbridge, Mt. Vernon, Ohio—a 102 cooler and 128 case complete with refrigeration; Harter's Market, Newark, Ohio—a 102 cooler, 1510 and 1512 case complete with refrigeration; P. M. Roman, Byesville, Ohio—a P-151 with 128 case and refrigeration; S. S. Hysell, Columbus—a 172 cooler and 1508 case with refrigeration.

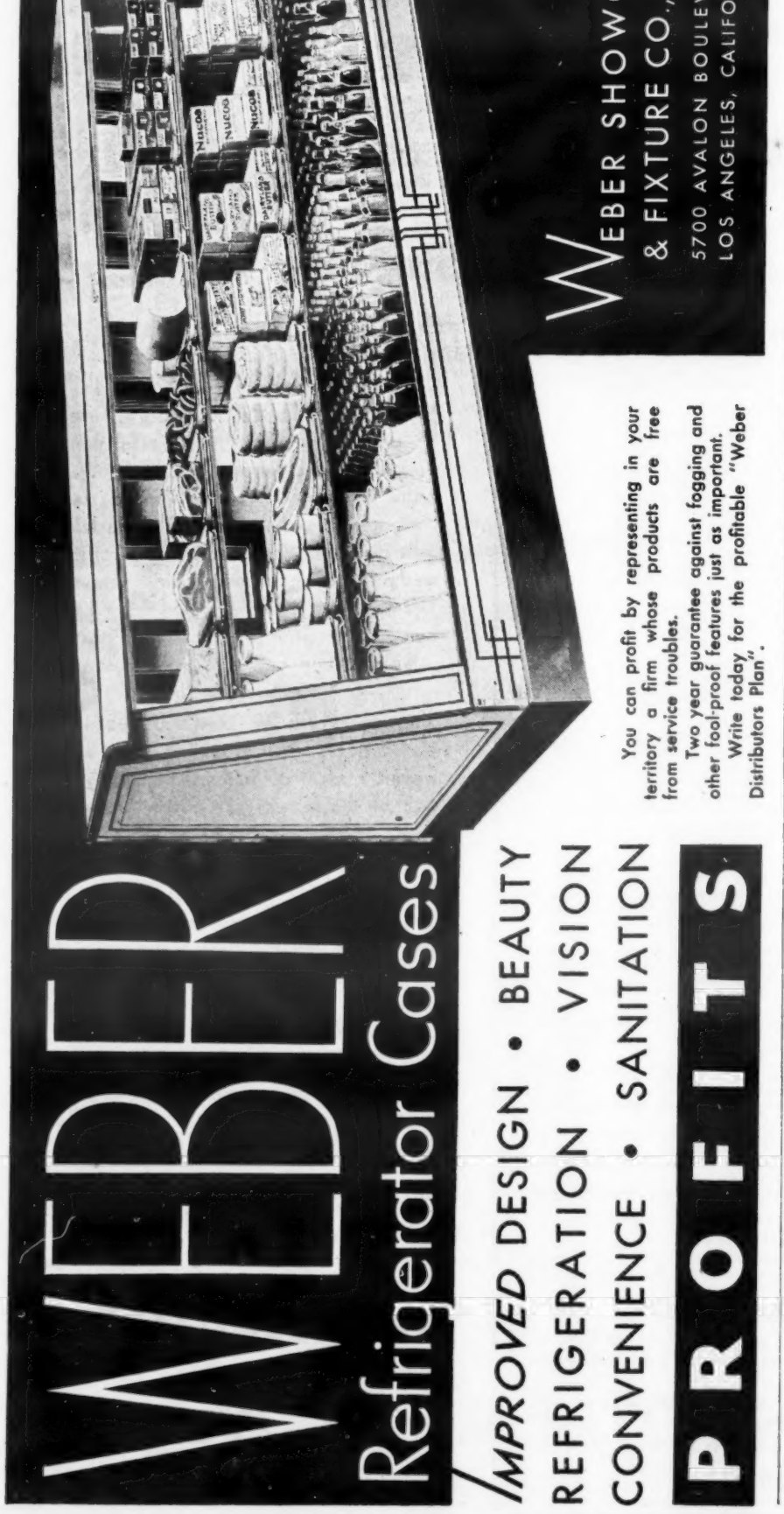
Seeger Pamphlet Tells About 'Series 7' Case

ST. PAUL—Seeger's "Series 7" of refrigerated display cases is the subject of a pamphlet now being mailed to prospects by the Seeger Refrigerator Co.

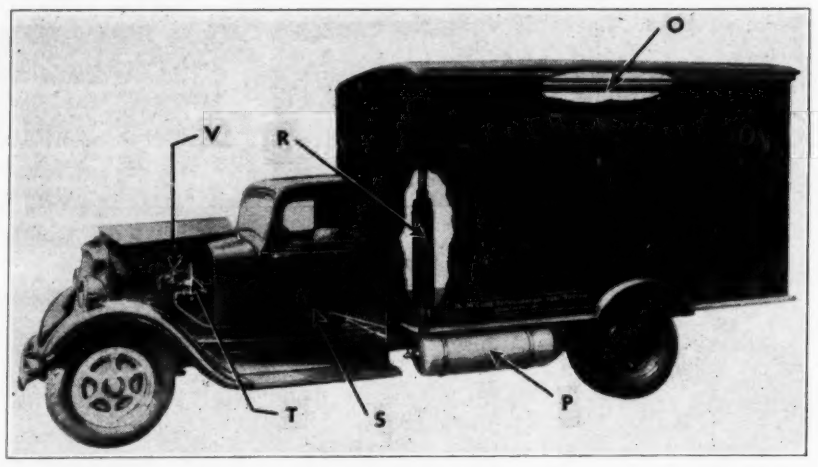
Addressed to merchants and storekeepers, the pamphlet points out economy advantages of Seeger cases in making possible increased profits through sales and savings in perishable merchandise.

Seven features of the "Series 7" boxes are enumerated and illustrated, as follows: bunker coils, exterior porcelain finish, double Thermopane glass, molded hard rubber doors, scale shelf, air lock, and porcelain food platters.

Inside the back flyleaf of the piece, engineering excellence of the line is again emphasized, features pointed out, and the statement made that, "as far as possible and practical, these cases are composites of many storekeepers' ideas."


WEBER
Refrigerator Cases
IMPROVED DESIGN • BEAUTY
REFRIGERATION • VISION
CONVENIENCE • SANITATION
PROFITS
You can profit by representing in your territory a firm whose products are free from service troubles.
Two year guarantee against fogging and other fool-proof features just as important.
Write today for the profitable "Weber Distributors Plan".
WEBER SHOWCASE & FIXTURE CO., Inc.
5700 AVALON BOULEVARD
LOS ANGELES, CALIFORNIA

Propane Cycle in Refrigerated Truck



Air from the interior of the truck body passes through openings in the sides and bottom of the outer sheathing of the convector (R) and then over the surface of the spirally wound coils. Through this chimney it is drawn upwards and recirculated by the motor-driven fan (L) through cold air duct (O). The dry gas is then led from the evaporator through tube (D) to the top of the heat exchanger, where, in its spiral descent, it absorbs the atmospheric heat of the incoming liquid fuel, passing outward through tube (J) to the regulating and mixing valves (S), (T), and (V), and then to the motor.

* * *

Improvements Made In McCord Propane System for Trucks

DETROIT — Improvements in the propane system of refrigeration for trucks and some features of its application were described by D. P. Heath of McCord Radiator & Mfg. Co. to members of the A.S.R.E. meeting here for their spring convention recently.

Elements in the McCord refrigeration-fuel system which have heretofore been separated and located both inside and outside the truck body, such as evaporator, heat exchanger, expansion valves, and other parts, are now combined in a compact tubular convector, Mr. Heath brought out.

Mr. Heath described the method by which refrigeration is obtained with this system as follows:

"Propane, carried in reservoirs under the truck, is led by its own vapor through a tube in the heat exchanger where the atmospheric heat of the liquid is removed.

"It then passes through the expansion valve from which it issues into the evaporator as a saturated gas and at a pressure of approximately 5 lbs.

"In its conversion to a dry gas, heat absorption is effected, and the surface of both tube and fin reduced to a low temperature.

"Air drawn from the interior of the truck body passes through openings in the sides and bottom of the outer sheathing of the convector and then over the surface of the spirally wound low temperature coils located in the annual space between the outer and inner casings.

"Through this 'chimney' it is drawn upwards and recirculated by a motor-driven fan through a cold air duct in the top of the truck.

"The dry gas is then led from the evaporator through another tube to the top of the heat exchanger where, in its spiral descent, it absorbs the atmospheric heat of the incoming liquid fuel as above mentioned, passing outward to the regulating and mixing valves and thence to the motor."

Mr. Heath explained that when cooling of the truck is required during periods when the motor is not operating, as, for example, during the loading period or during a night stopover, a special circuit is provided to permit circulation of any refrigerating medium.

Two methods of temperature control for a propane refrigeration system of this type were described by Mr. Heath as (1) means of venting outside air into the truck body; (2) thermostatically by-passing a certain amount of propane.

Big difficulty at present in widening the application of the propane system for refrigerated trucks and air-conditioned buses is the scarcity of gasoline service stations which handle propane, Mr. Heath pointed out.

"In some metropolitan centers there are pumps from which the reservoirs can be filled," Mr. Heath stated. "Owners of large fleets of trucks and buses could well afford to install their own dispensing tanks.

"Use of interchangeable tanks, which are not hard to handle, might provide the answer."

Mr. Heath doesn't believe that the dual fuel system (gasoline and propane) requiring a mixing valve will be employed when propane comes into more wider use.

Propane, he declared, has a high octane rating, making it more economical, and when produced on a fairly large scale will cost less than gasoline to buy.

One advantage of the propane system for the air conditioning of buses is that the system doesn't add much weight to the bus, Mr. Heath stated.

Propane weighs less than gasoline, and in a combined refrigeration and fuel system where only propane was used the extra weight added by the air-conditioning system wouldn't make for a very great increase as compared to a bus carrying a big gasoline load.

Steering Wheels Tested In Ice Cream Cabinet

DETROIT—A standard Frigidaire ice cream cabinet is being employed in low-temperature test work carried out at the plant of the U. S. Rubber Co. here for the purpose of providing absolute safety for drivers in the construction of hard-rubber steering wheels.

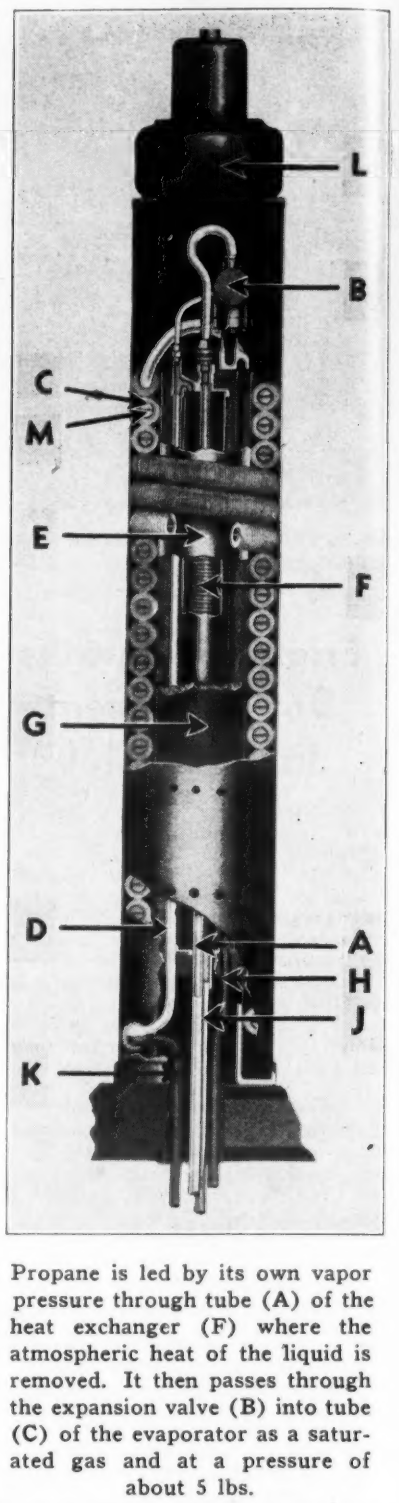
Hard rubber has been known to crack under extremely low temperature conditions, or where there is sudden variations of temperature. The ice cream cabinet was used to produce extreme conditions for testing the material used in steering wheels.

Temperatures as low as —30° F. have been maintained in the 2-hole, portable Frigidaire ice cream cabinet with rectangular compartments. The standard cold control makes it possible for workers conducting the tests to obtain the desired temperatures.

McCray Refrigerator Sold To Raleigh Bakery

RALEIGH, N. C.—L. B. Crosby, McCray distributor here recently sold a McCray model 700 refrigerator to the Royal Baking Co. for its bakery.

Convector



Propane is led by its own vapor pressure through tube (A) of the heat exchanger (F) where the atmospheric heat of the liquid is removed. It then passes through the expansion valve (B) into tube (C) of the evaporator as a saturated gas and at a pressure of about 5 lbs.

Major Appliance Co. to Sell Hussmann Line

OMAHA—The Major Appliance Co. here has been named distributor of Hussmann-Ligonier refrigerators for eastern Nebraska and western Iowa. The Major Appliance Co. is also Frigidaire distributor for this territory.

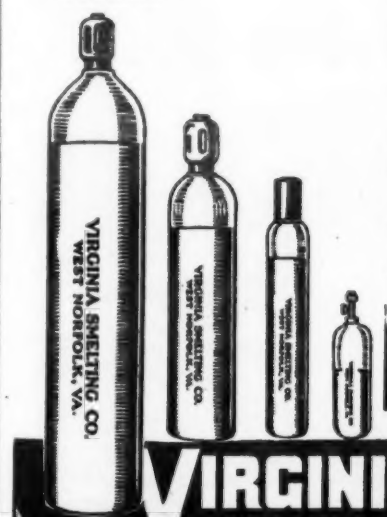
NO SUBSTITUTE
Can EQUAL
EXTRA DRY ESOTOO
(Liquid Sulphur Dioxide)

Sold in MAINE by
GALT BLOCK WAREHOUSE CO., PORTLAND

Absolute dryness is attained by our exclusive patented process—and there are no foreign substances in suspension to clog or impair the efficiency of refrigerating units.

That is one of many reasons why this excellent refrigerant stands so high in the favor of Refrigeration Engineers and Service Men in all parts of the world.

Another product by the makers of EXTRA DRY ESOTOO is V-METH-L; a refrigerant which can be safely used with flanged copper tubing—widely used in Ice Cream Cabinets, etc. The coupon will bring data.

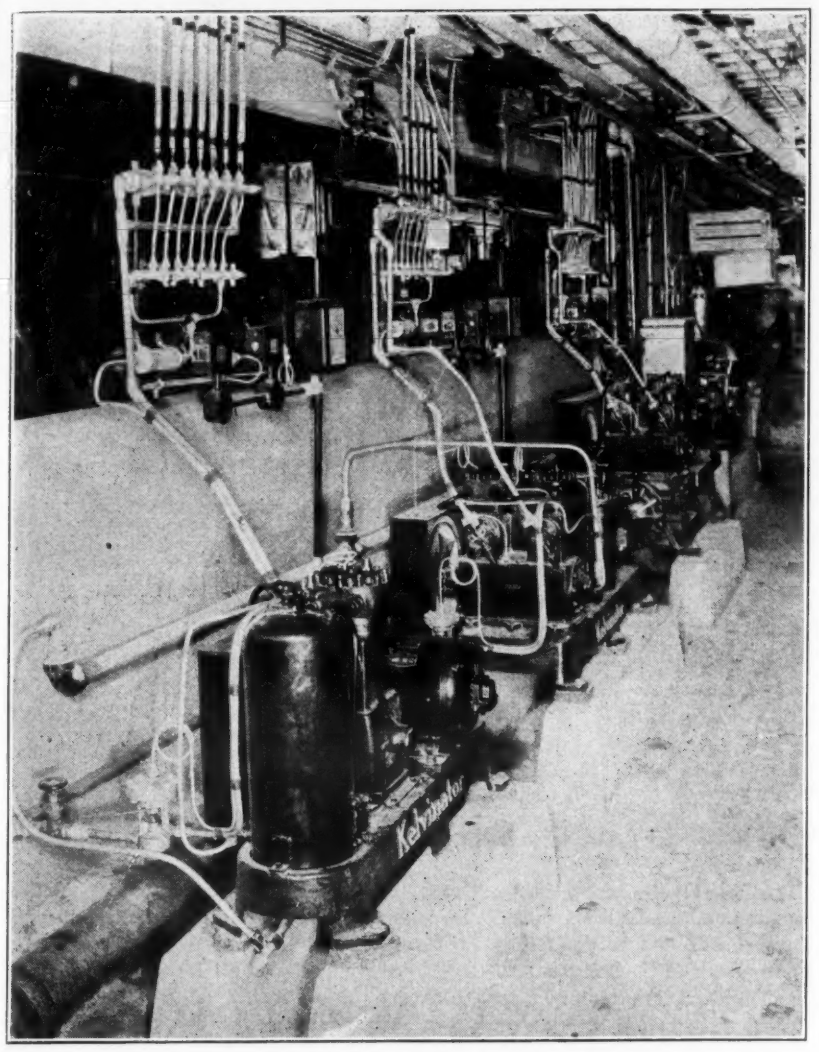


VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

MAIL THIS COUPON Now

F. A. Eustis, Sec'y, Virginia Smelting Co., 131 State St., Boston, Mass.
Send me the literature I have checked. I am interested in receiving any additional literature on Electrical Refrigeration you may issue from time to time.
☐ Folder: Extra Dry ESOTOO (Liquid Sulphur Dioxide) ERN-6-12-35
☐ Folder: V-METH-L (Virginia Methyl Chloride)
☐ Folder: Transferring from large to small cylinders
☐ Circular: Physical properties of various refrigerants
Name .....
Street & No. .....
City & State .....

They Replaced a 55½-hp. Machine



Battery of Kelvinator condensing units which took the place of a large ice-making plant in the Home Dairy Co. store in Saginaw, Mich. Kessel & Rummel, Kelvinator dealer, made the installation.

* * *

Small Units Replace Obsolete Machines

SAGINAW, Mich.—"The food store that neglects to keep in step with the times, cannot hope to keep its standing in the community," declares Charles Hack, president of the Home Dairy Co. here. And to demonstrate this belief, the head of the old, established organization which operates markets and restaurants in five cities recently tore out an $8,000 installation of refrigerating machinery of obsolete design and installed the latest type of Kelvinator equipment.

For some time Mr. Hack and his associates had been studying the results being obtained by stores using modern, improved refrigeration equipment. As a result, they decided to completely equip their Saginaw store with a Kelvinator commercial refrigeration system, despite the fact that they still had a considerable investment in their old ammonia circulating brine system.

"We felt that the old system, good as it was the time we bought it, could be materially improved upon from the standponit of better food preservation, reduced shrinkage and lower operating cost," Mr. Hack states, "and we wanted these advantages to pass along to our customers."

Ed. Rummel of Kessel and Rummel, Saginaw Kelvinator distributor, and George F. Dent, Bay City Kelvinator distributor, worked together in securing the order and making the installation.

Kelvinator equipment selected to handle all the requirements combines to make a 10-hp. system, as compared to the 55½-hp. plant that formerly furnished refrigeration for this store.

A 2-hp. Kelvinator unit handles 71 ft. of display case. A 3-hp. unit cools five salad pans, one water cooler in the cafeteria, and nine drinking water outlets in the lunch counter. The same unit also handles an ice maker, producing 1,000 lbs. of ice daily.

A 5-hp. unit cools seven large walk-in coolers for fish, fruit, meat, dairy products, a bakery box, meat service cooler, and kitchen cooler.

The operating cost with the new system has been so materially reduced, Mr. Hack states, that he thinks the new equipment can be written off entirely in two years.

BRUNNER
Send for the New
REFRIGERATION CATALOG
Eight Models of Compressors
Forty-one Models of Highsides
from 1/6 H. P. to 15 H. P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y.

Sanitary Builds Small Portable Display Cabinet

FOND DU LAC, Wis.—A light-duty, self-contained portable refrigerated display counter, especially adapted for the display and sale of smoked meats, cheese, salads, delicatessen products, hamburger, and light lunches, has been put on the market by Sanitary Electric Corp. Its retail price is $250.

The case has a capacity of 7½ cu. ft., with 10.7 sq. ft. of shelf area. It is 41⅝ in. wide, 29¼ in. deep, 34 in. high at the front, and 41 in. high at the back.

Exterior finish is in Sanilux, and the food chamber is lined with Sanitary seamless porcelain. Free moving ball bearing casters provide easy moving of the counter, so that it may be shifted around where desired.

An adjustable controller permits operating the evaporator on various temperature settings, or on defrosting cycle for high humidity when desired. The evaporator top may be used for ice cubes, assuring ample capacity, since it has more than 6.6 ft. of surface space.

The top cover is of heavy double glass, with chromium-plated frame and handles. The glass is set in rubber, and has a rubber spacer between its two sides.

Compressor is of the reciprocating type, 2-cylinder, of 400 r.p.m. The motor is of ⅓ hp., rubber mounted. Methyl chloride is used as the refrigerant. The unit has an ice melting equivalent of 180 lbs. per 24 hours, and weighs 78 lbs. Weight of the whole counter assembly is 450 lbs.

Sales Up on Kelvinator Ice Cream Cabinet

DETROIT—Unprecedented increases in the sale of Kelvinator ice cream cabinets is an indication that ice cream manufacturers expect a larger volume of business this year, states Edward R. Legg, manager, national business division, Kelvinator Corp.

"Our sales of ice cream cabinets increased more than 500 per cent up to the middle of May over the same period last year," reports Mr. Legg. "We believe this record is a certain indication that manufacturers of ice cream are looking forward to a much larger business this summer than they have enjoyed any year since 1930, the peak in ice cream gallonage.

"The recent introduction of the Kelvinator 'Specialty Chest' has given our sales a boost, with 3,000 of them already shipped to ice cream makers."

Every one of the eight Kelvinator field men handling ice cream cabinet sales was over 100 per cent of quota as of May 15, the high man being D. J. Bowen, Atlanta, with the remarkable record of 334.8 per cent.

Another field of commercial refrigeration in which Kelvinator sales have shown a big growth is that of the mechanically refrigerated truck.

Steamship Normandie Has Very Latest in Refrigeration for Ocean Liners

NEW YORK CITY—When the Normandie, new super-ship of the French Line and largest vessel afloat, docked in New York Harbor recently, she brought with her, in addition to a new trans-oceanic speed record, the latest example of electric refrigeration as applied to ocean travel.

Electric refrigerators, water coolers, beer and wine coolers, ice cream cabinets, and galley storage boxes are installed in 56 places aboard the 56,000 ton liner. The equipment was furnished by the Paris, France, branch of Frigidaire, Ltd., export distributor for Frigidaire Corp.

Twenty-three household refrigerators, 13 water coolers, 11 beer coolers, four storage boxes, and five ice cream cabinets are used in various departments of the liner. Refrigerators are in use in the captain's quarters, staff officers' cabins, and deluxe passenger suites.

The equipment is believed to be the most complete ever carried by any passenger vessel.

It is interesting to note that, while American housewives turn to France for lessons in culinary skill and variety, owners of the Normandie turned to the United States to fill their refrigeration needs for the new superliner.

Leon Rubay, wholesale division manager for Frigidaire, Ltd., Paris, sold all of the equipment used on the Normandie. It was the seventeenth passenger liner sale which he has obtained since he joined Frigidaire in 1926 as branch manager at Nice. E. N. Madden, vice president of Frigidaire, Ltd., credits M. Rubay with having sold more than $1,600,00 worth of refrigeration equipment during his association with the company.

Other French Line vessels carrying Frigidaire equipment are the Ile de France, Paris, Lafayette, Champlain, and Colombie.

Refrigeration, as it applies to ocean travel, has made sensational advances in recent years.

Before the method of storing and using ice was adopted, the only known ways of preserving food on shipboard were salting and drying, and, later, the sealing or canning method. One of the accepted factors in sea travel used to be that the daily fare would consist of something salted or dried.

Only exceptions to this routine were to be found in the first day or two out of port, before fresh foods had become too badly spoiled—or on those rare occasions when the ship anchored close enough to some island to offer opportunities for obtaining wild game.

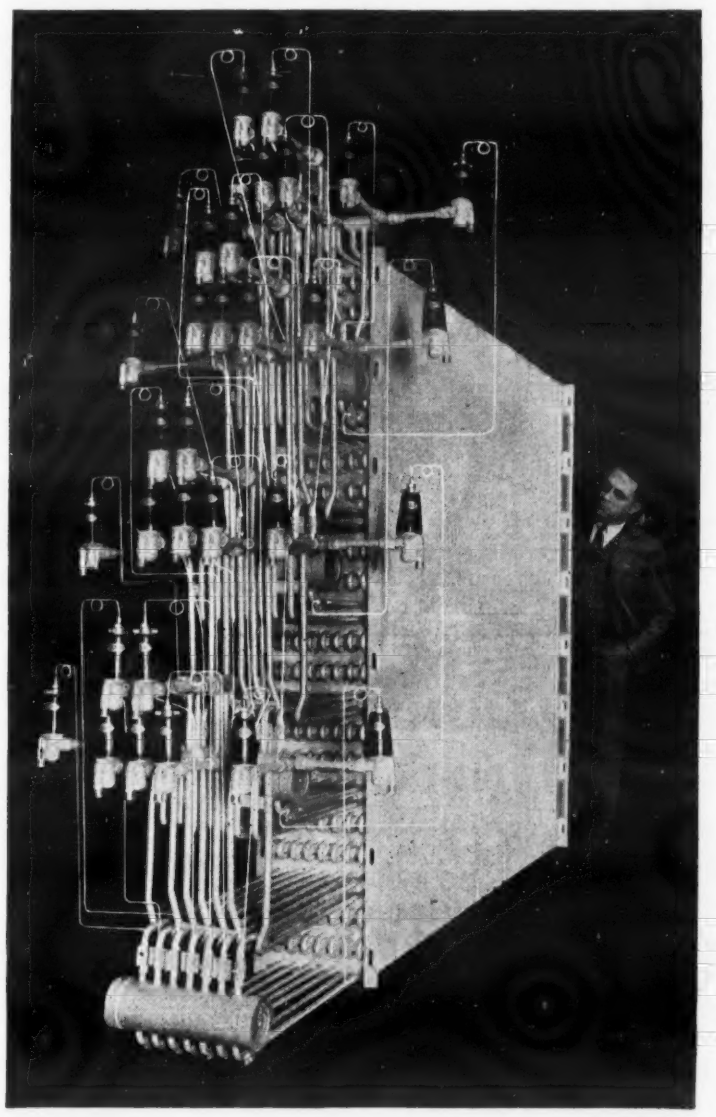
The later application of ice, providing a new system of food preservation by reason of a different basic principle, the control of temperature, and subject to use with virtually all types of fresh or so-called perishable foods, provided the first step in an evolutionary process that was later destined to reach a magnitude beyond the fondest dreams of its early proponents.

The seafarer of old would marvel at an electric refrigerator in the galley, to say nothing of private cabins, bars, and staff quarters.

Interesting applications of refrigeration equipment aboard the Normandie are the units in the Jewish diet kitchen, a galley designed to cater to the food requirements of Jewish passengers; the deck pantries; mechanics' pantry; radio operators' pantry; deck hands' pantry; captain's suite pantry; deluxe suite pantries; tourist deck pantries; third class bar; tourist bar; grand saloon pantry; main kitchen; crew's kitchen; tourist kitchen; swimming pool bar; first class smoking room bar; daily service wine store room; private bar; terrace bar; tourist saloon bar; distribution store room; staff mess pantry; musicians' mess pantry.

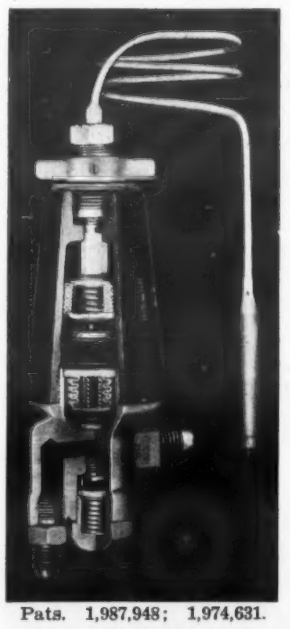
The Normandie was met on its arrival in New York harbor by G. D. Riedel, president, E. N. Madden, vice president, and H. R. Coate, advertising and sales promotion manager of Frigidaire, Ltd., and a group of Frigidaire Corp. officials from Dayton.

Photograph of a Complete Fedders Low Side including Coil and Valves. Patents Pending. →



How
Fedders Gives You
COMPLETE
Air Conditioning
LOW SIDES
cataloged on a
PACKAGE BASIS
Including
Cooling and Dehumidifying Coils and High Capacity Thermostatic Expansion Valves

COMPLETELY MANIFOLDED READY FOR INSTALLATION



Pats. 1,987,948; 1,974,631.
FEDDERS MODEL 33-HC High Capacity Thermostatic Expansion Valve for Air Conditioning

The "Package Merchandise" principle of Fedders coils for air conditioning provides complete low sides delivered on the job already manifolded by Fedders exclusive (patents pending) method of manifolding. It assures correct distribution of refrigerant throughout the coil in accordance with the varying heat transfer differentials of each row of tubing.

Engineered, assembled, tested and dehydrated by experienced factory men under ideal factory conditions, Fedders factory-manifolded coils eliminate the hazards and expense of field assembly.

All Fedders manifolding is silver-soldered, then tested under water with 300 pounds pressure. Fedders air conditioning assemblies are approved by the Underwriters' Laboratories. The thorough dehydration under vacuum in accurately controlled electric ovens assures complete coil arriving on the job in clean, dry condition ready for immediate hook-up.

Properly designed mounting brackets are punched for quick, easy installation.

Fedders Model 33-HC High Capacity Thermostatic Expansion Valves make it possible to take full advantage of the manifolding system because of their easy sensitive adjustment,—thus obtaining a well balanced condition throughout the entire coil and between the low side and high side.

Bulletin 91 catalogs Fedders coils on a package basis in 75 models with capacities sufficient for use with condensing units from 1 to 100 HP. Write for your copy.

FEDDERS MANUFACTURING CO.
57 TONAWANDA ST. BUFFALO, N.Y., U.S.A.

106 E. 19th St., New York
603 W. Washington Blvd., Chicago
303 E. 6th St., Cincinnati
209 S. Pearl St., Dallas
923 E. Third St., Los Angeles

ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?

SERVICE

Construction, Operation and Care of Condensers

Editor's Note: Mr. Newcum's articles constitute a manual of information on present-day refrigeration systems which will add to the service man's knowledge of refrigeration, and which will assist him in meeting specific problems in servicing operations in the field.

The first article in the series, which was published in the April 10 issue of the NEWS, dealt with the fundamentals of refrigeration. Inasmuch as refrigeration is really a process of the removal of *heat* from a given space, these "fundamentals" consist mainly of the terms, definitions, and physical laws which are involved when heat is transferred from one substance or space to another location.

In the second article, appearing April 17, the three principal parts of the refrigeration system — cabinet, evaporator, and condensing unit—were described briefly and the operating cycle of a refrigerator was explained in detail. Also published with this article was the refrigerant pressure-temperature chart and an explanation of service gauges.

Properties which are necessary for a good refrigerant were explained in the third article which appeared in the April 24 issue of the NEWS. The article also gave a detailed comparison of the physical properties and characteristics of the following refrigerants: sulphur dioxide, methyl chloride, ethyl chloride, ammonia, and Freon.

Listed in this article are the kinds of refrigerants being used in the various household refrigerator systems which are now being manufactured, and in some which are no longer manufactured.

The instalments published in the May 1 and May 8 issue dealt with reciprocating compressors and their component parts. The May 1 article described the compressor body assembly, housing assembly, crankshaft and connecting rod assembly, eccentric shaft and connecting rod assembly, piston and piston valve assembly, and discharge valve assemblies.

Service operations on these various compressor parts are outlined.

The May 8 article dealt with different designs of stuffing box seals, operating principles of these seals, methods of servicing seals, compressor flywheels, direct-connected units.

Rotary compressor design and operation were described in the May 29 issue. Norge and Majestic makes of rotary compressors were described in some detail. Parts in the rotary compressor assembly were explained, and methods of servicing suggested.

This week's instalment deals with condensers for compression-type refrigerating systems, and outlines details in the construction and operation of this part of refrigeration systems. Various types of condenser design are described and illustrated, and suggestions are made for their care and servicing.

Discussed in the June 5 article were the care and servicing of compressor and shut-off valves, gaskets, and the construction, use, and servicing of condensing unit shut-off valves.

Mr. Newcum's articles are illustrated with photographs, drawings, and diagrams.

62. Condensers

The purpose of the condenser in the refrigerating system is a most important one as it is into the condenser that all of the heat-laden gas pumped by the compressor is forced under high pressure.

As this heat-laden gas is being constantly forced into this space, while the compressor is in operation, the temperature of the gas is increased, and in turn the temperature of the condenser's surface is increased above the temperature of the surrounding cooling medium. When the point is reached the heat leaves the gas, by conduction through the walls of the condenser.

This brings to light two important factors. First, the condenser must have sufficient inside area to provide ample storage space for the gas being forced into it under normal conditions, and while the process of condensing is taking place. And second, it must have sufficient heat dissipating surface to provide a sufficiently rapid rate of heat transfer or flow of heat from the gas to the cooling medium.

The condensers used on domestic and small commercial systems are of the air-cooled type, using air as a cooling medium. The condensers are usually constructed of copper (for all refrigerants except ammonia) for copper is a very good conductor of heat.

The earlier models of several manufacturers used a plain copper coil, wound in convenient shapes to fit the space provided for the condensers. Fig. 75 is an oval-shaped copper coil condenser used on the earlier Frigidaire condensing units.

The tubes were pressed flat for two reasons. First, the coil with the tubes flattened, provided the same internal area, but required less vertical space. Second, the spokes on the fly wheel on the compressor, which were shaped to have the effect of fan blades, provided the movement of air across the condenser.

As this movement of air was horizontal more tubing surface was in contact with the moving air. As the speed of the compressor was around 400 r.p.m., the movement of air was slow. Allowances were made for this condition and the condenser had a compartively large inside area, and a relatively small outside surface. So long as the movement of air was not restricted, this type of condenser functioned satisfactorily.

A large number of the earlier condensing units were installed in the basements of homes, where the air was cool and unrestricted. When they were installed in the machine compartments below the refrigerator, provisions for air circulation was made by the use of louvered doors and other openings.

As refrigerators became more common it was found that installations were being made in such a manner that the air flow was restricted, such as recessing the refrigeration in a tight opening in small hot kitchens, both in apartment houses and homes.

This materially affected the operation, for with a limited blast of air over the condenser, the heat was not dissapated as rapidly as it was being introduced and the operating head pressures mounted, resulting in long or continuous operation with unsatisfactory refrigerator temperatures.

This condition called for two improvements: (1) a greater circulation of air over the condenser, and (2) a greater condenser surface properly located in the direct blast of the circulating air.

The increased circulation of air was obtained by placing a fan directly on the motor shaft or motor pulley, which provided an increased movement with the motor speed of 1725 r.p.m.

To wind a copper coil condenser with sufficient surface and so that this surface could be condensed to the area covered by the air blast was difficult. The radiator type of condenser was then introduced. Such a condenser is illustrated in Fig 76.

The radiator type of condenser has considerably less inside area, but more outside heat dissipating surface, made possible by the use of fins pressed over the condenser tubes in such a manner as to provide definite contact between the tubes and the fins. These fins may be called extended surfaces.

With this type of condenser located directly in the air blast caused by the fan, more rapid heat transfer was made possible and lower operating head pressures resulted.

At about this same stage there was an increased demand for noiseless operation in home refrigerators. To bring this about, solid machine compartment doors were used to keep the

(*Concluded on Page 25, Column 1*)

Oval-Shaped Copper Coil Condenser

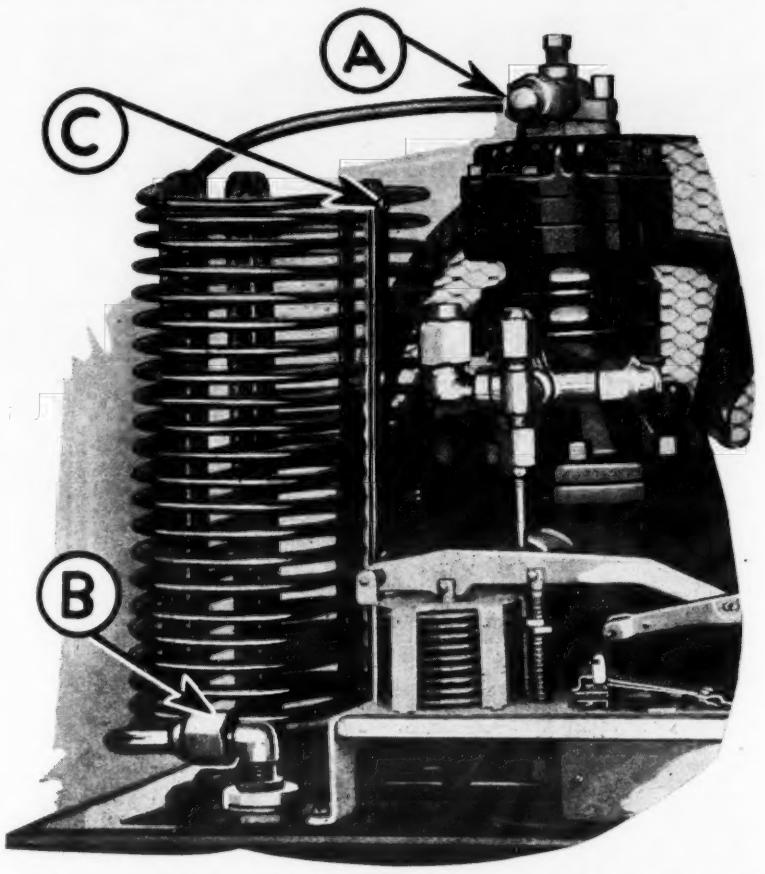


Fig. 75. Oval-shaped copper coil condenser as used on the earlier Frigidaire condensing units. The upper part connects directly to the compressor discharge valve (A), while the condensed gas enters the receiver at (B). Strips of metal (C) are used to hold the coils in correct position and are fastened to compressor base by use of machine screws.

SERVICE OPERATIONS

A SERIES OF LESSONS OUTLINED FOR THE USE OF THE SERVICE MANAGER IN INSTRUCTING BEGINNERS IN SERVICE WORK

No. 9—Attaching the Compound Gauge (Frigidaire System)

By K. M. Newcum

REASON:

Gauges are the most important part of a service man's tool kit, as the compound gauge is used to determine the pressure on the low side of the system in diagnosing service troubles, setting switches, and many other problems that will appear later in the manual.

PROCEDURE:

A. Close the suction line shut-off valve at the compressor all the way to the *left*, using the box wrench.

B. Remove the blind flare nut and attach the gauge with a piece of ¼-inch tubing about 16 inches long.

C. Purge the air from the gauge line by cracking the flare nut next to the gauge, and opening the suction line shut-off valve slightly until a slight rush of gas is heard coming from the line. Tighten the flare nut.

D. Open the suction line shut-off valve about one and one-half turns to the right until pressure is observed on the gauge, which indicates that it is registering.

E. Test all the joints with ammonia.

F. Check with instructor.

Note: If the gauge hand tends to jump at such a degree that it is hard to determine its reading, close the valve to the left until the jumping stops. Be sure that the gauge is still registering.

(Any Condensing Unit Not Equipped with Low Pressure Tee)

PROCEDURE:

A. Close the suction line shut-off valve all the way to the left, using either the box or ratchet wrench.

B. Remove the pipe plug from suction line shut-off valve with a box wrench.

C. Screw gauge into opening, tighten with open-end wrench until dial faces a direction that can be easily read.

D. Open suction line shut-off valve about one and one-half turns to the right so that gauge will register.

E. Test around threads with ammonia.

F. Check with instructor.

Note: If there is not enough space between the motor and the compressor to screw the gauge in, in the manner outlined above, secure a street ell from a plumbing shop and insert into valve opening, then screw gauge into ell.

MINIMUM INELASTIC STRETCH

MANHATTAN V-BELTS

for Fractional Horsepower Service are made with an endless whipcord section completely floated in rubber and welded securely into a strong load carrying structure possessing the minimum of inelastic stretch. . . . Belt life is increased many times and belt stretch is practically eliminated. Test Manhattan V-Belts on your drives. Manhattan engineers assure you efficient and long performance. A trial will convince you. To eliminate noise—specify Manhattan.

For complete literature, write the factory or any of the following Sales Branches:

Birmingham Cleveland New Orleans
Boston Detroit New York
Chicago Minneapolis Philadelphia
Pittsburgh St. Louis

THE MANHATTAN RUBBER MFG. DIVISION
of Raybestos-Manhattan, Inc.
Executive Offices and Factories
45 TOWNSEND ST., PASSAIC, N. J.

Your Dealers
Can Better Afford
A Free Service
Guarantee if you
Specify
VALVES
and FITTINGS
by
Weatherhead

THE WEATHERHEAD CO.
620-714 Frankfort Ave., Cleveland, O.

Radiator-Type Condenser

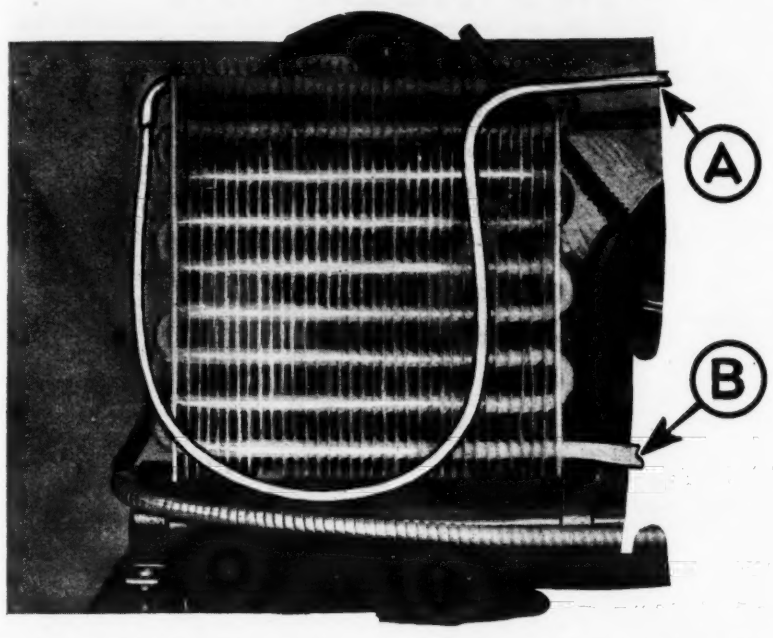


Fig. 76. Radiator-type condenser, built in many sizes and shapes to fit different model compressors. The upper connector (A) connects to the Compressor discharge valve, and the lower connector (B) is connected to the receiver.

Construction & Care Of Condensers

(*Concluded from Page 24, Column 5*)

noise out of the kitchen and acoustical materials were installed inside the machine compartments to deaden the noise of the condensing units.

The effect of these changes are obvious. The air circulation was restricted, and even with the finned radiator-type condenser and the motor-driven fan, the operating head pressures under extreme summer heat conditions were excessive.

Cabinet and condenser designs were altered to provide more positive but controlled air circulation and longer condensers were necessary.

Competitive conditions have made it necessary to trim costs where possible in refrigeration design and it may be expected that the smallest condenser possible will be found on the average condensing unit.

Condensers work at their highest possible efficiency when they are perfectly clean, for any dirt or dust accumulated on the condenser acts as an insulator to prevent the heat from leaving the refrigerant and also prevent the air from coming in contact with the condenser surfaces.

The service man should always clean the condenser when servicing the condensing unit. Its efficiency is maintained at a maximum with a clean condenser. It is often necessary to clean the condenser with a cleaning fluid that will remove oil, as oil on the condenser very readily collects dust and dirt.

The condenser may be said to be the limiting factor on the refrigeration system. The compressor may be speeded up to increase its displacement, but the condenser can only take care of a certain definite amount of heat-laden gas with each definite cooling medium temperature.

The higher the cooling medium temperature, the higher the operating head pressure. The higher the operating head pressure the lower the efficiency of the compressor, hence the entire system.

Considering the limited inside area of the condenser, the effect of air in the system is damaging. The air will collect at the topmost part of the condenser, and as it is non-condensible at refrigerator pressures, it will occupy valuable space in the condenser, needed for condensing the heat-laden gas. A very small amount of air will cause an increase in head pressure of several pounds.

This air may be removed by stopping the compressor and allowing the condenser to cool off to room temperature. Then attach a line to the discharge shut-off service valve. Crack the discharge shut-off service valve slightly off the back seat allowing a slight escape through the valve. This purging should be done slowly and for several minutes depending on the amount of air in the system. A small amount of refrigerant will escape with the air.

Methyl chloride, Freon, and similar refrigerants may be exhausted into the open air. SO_2 having a very disagreeable odor and being more harmful to plants, pets, etc., should be discharged into a neutralizing solution of lye and water. One pound of lye in a gallon of water will neutralize about ½ lb. of SO_2.

An over-charge of refrigerant in the system will also materially effect the condenser efficiency. Many systems have been found to have a sufficient over-charge to over fill the liquid receiver and take up considerable space in the bottom of the condenser with liquid refrigerant.

The receiver need not be over 1/3 to ½ full to provide liquid for proper operation. When the liquid storage exceeds this amount it is robbing the condenser of valuable space and results in higher than necessary head pressures.

Most all air-cooled condensers are of the continuous tube type, having a single row of tubes (Fig. 77) for the smaller size units, while the condensers used on larger size units have two or more rows of tubes. Fig 78 illustrates a typical large capacity condenser, with two rows of tubes.

The top tube of the condenser is connected to the discharge shut-off service valve, and the bottom connection is made to the liquid receiver.

Continuous-Tube, Single Row Type

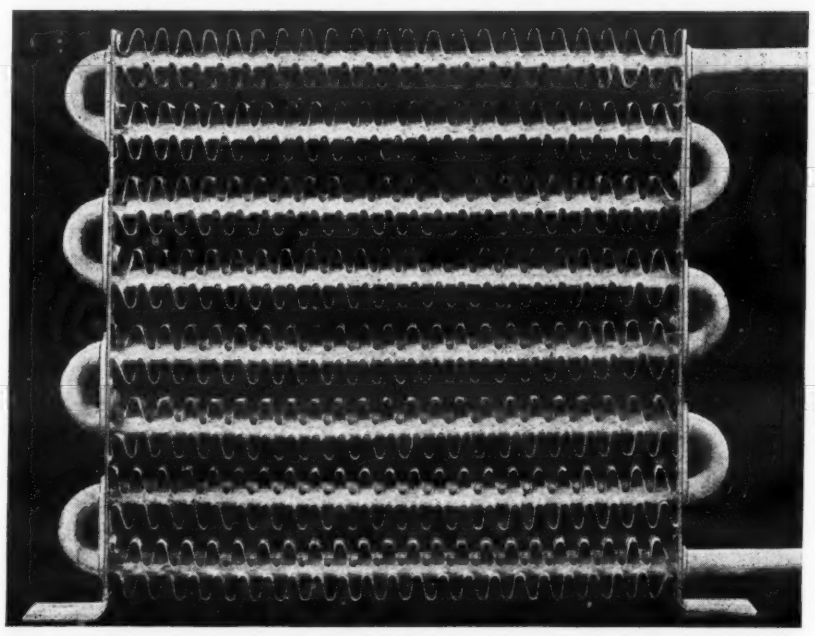


Fig. 77. Air-cooled condenser, continuous tube type, having a single row of tubes. For smaller-sized systems.

Burnstein-Applebee to Wholesale Parts

KANSAS CITY—The Burnstein-Applebee Co., 1012-14 McGee St. here, has enlarged its facilities to handle nation-wide wholesale distribution of parts and supplies used in air conditioning and commercial and domestic refrigeration.

The company has been supplying refrigeration and air-conditioning parts to dealers in the Kansas City area for some time, but this is its first bid for national business. It has been distributing radio and electrical supplies nationally for seven years.

Burnstein-Applebee Co. carries a crew of 30 employees, and occupies a four-story building with 28,000 ft. of floor space. A new catalog, recently issued, is available to dealers on request.

Beckett Sets Up Service Parts Department

DALLAS—The Beckett Electric Co., Inc., jobbers of wholesale electrical supplies and equipment, has set up a refrigeration service parts supply department, for the marketing of service parts at wholesale direct to dealers and service men throughout the country.

The company has just issued a new catalog on refrigeration and air-conditioning service parts, tools, and equipment for all makes of electric refrigerators.

2 New Stock Points Added By Virginia Smelting

WEST NORFOLK, Va.—Two new stock points which have been added to the list of those handling "Extra Dry Esotoo" and "V-Meth-L" for Virginia Smelting Co. of this city, are the County Seat Plumbing Supply Co., White Plains, N. Y. and T. W. Binder, Newark, N. J.

Large Capacity Condenser

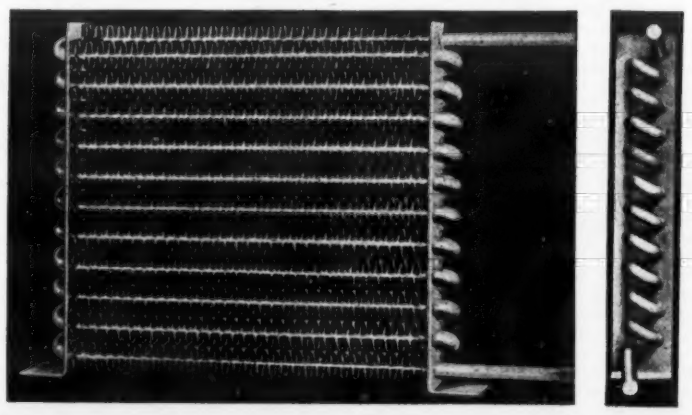


Fig. 78. Typical large capacity condenser, with two rows of tubes.

BUYER'S GUIDE

MANUFACTURERS SPECIALIZING IN SERVICE TO THE REFRIGERATION INDUSTRY

STANDARD REFRIGERATING APPLIANCES

AUTOMATIC SUCTION PRESSURE THROTTLING VALVE

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

AMERICAN INJECTOR COMPANY 1481-14th. Street, Detroit, Mich.

Everything Needed **PARTS-SUPPLIES-TOOLS**

FOR SERVICING and INSTALLING ALL MAKES OF REFRIGERATION EQUIPMENT

We have what you need for repairing and installing all types of domestic and commercial refrigeration equipment. Our stock is complete. Our service is speedy and accurate. We are as near you as your telephone. Send business card or letterhead for our elaborate Free catalog.

WHOLESALE ONLY
For Your Protection

IMMEDIATE SERVICE

UTILITIES ENGINEERING SALES CO.
Telephone: DELaware 5350 410 N. Wells St., Chicago

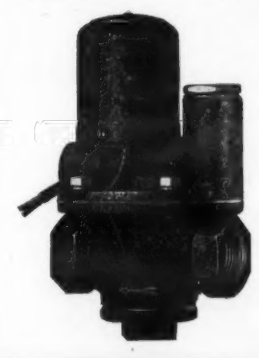
Type X

The **DAYTON CARRIER TRUCK**
Deliver your Refrigerators on Rubber
Will Not Mar—Speeds Delivery

Two sizes—Type X with 53 inch handles and 8 inch rubber wheels—Type Y with 70 inch handles, 8 inch rubber wheels and skids.

Type X with one strap.....$17.00
Type Y with one strap..... 18.50
f.o.b. Dayton

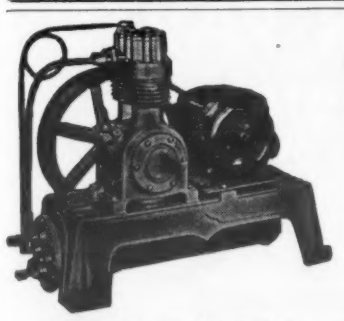
International Engineering Inc.
Dayton, Ohio 15 Park Row, N. Y.



WATER CONTROL

A large capacity valve with a very low power consumption due to the fact that the Model 66 is based on the by-pass principle. Solenoid need only open up small by-pass. Made for ½" or ¾" pipe connections. Has ⅞" orifice and carried in wide voltage ratings. Write for Bulletin 405.

AUTOMATIC PRODUCTS COMPANY
121 N. Broadway Milwaukee, Wis.



STARR FREEZE
OUTSTANDING PERFORMANCE
attested by satisfied users — EVERYWHERE!

Sturdy Condensing Units from 80 to 2868 Lbs. I.M.E., and all other commercial refrigeration equipment—Wall type cases with machinery—A beautiful household line of modern, conservative styles—Write for full data.

THE STARR COMPANY
Cable "Starr" Richmond, Indiana (factory) U. S. A. Since 1927
1344 S. Flower St., Los Angeles, Calif.

Style EW—Water Cooled With Water Cooled Head

- LARGE RECEIVERS
- OVERSIZE CONDENSERS
- TWIN CYLINDERS
- 1/6 to 10 H.P. UNITS

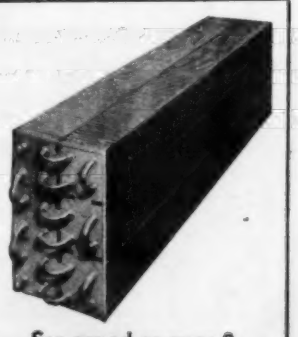
PARKER MANUFACTURING CO LOS ANGELES CALIF

"FROSKIST"
for
FREEZER CASES
ICE CREAM CABINETS
WATER COOLERS

PARKER MANUFACTURING CO.
2625 Santa Fe Ave.
LOS ANGELES, U. S. A.

KRAMER
COMMERCIAL EVAPORATORS
3" - 2½" - 2" - 1¾" - 1½" - 1¼"
Tube center built to any overall sizes and capacities
UNIT COOLERS — COOLING COILS — CONDENSERS

TRENTON AUTO RADIATOR WORKS
210-212 West 65th St. New York City
TRENTON New Jersey
3114 Liberty Ave. Pittsburgh, Pa.



See our ad on page 2

FACTORY ENGINEERS SUPERVISE THIS TRAINING

THERE is no finer insurance for success in Refrigeration and Air Conditioning installation and service work than the right kind of training.

R-A-C-I Training is the right kind. To make doubly sure that men are trained exactly as the industry wants them trained, leading manufacturers have appointed some of their own engineers as a Board of Governors to direct and supervise the training. These men meet in regular conferences and have full power and authority to make the training fit the needs of their industry, at all times.

Men who are ambitious to advance in this big, new field, and their employers as well, are invited to write for details.

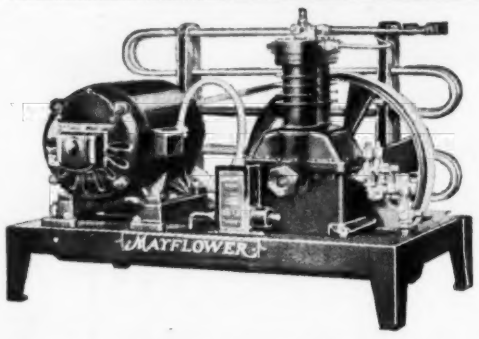
REFRIGERATION AND AIR CONDITIONING INSTITUTE
2150 LAWRENCE AVE. — CHICAGO

The Officially Endorsed School

BUYER'S GUIDE

MANUFACTURERS SPECIALIZING IN SERVICE

TO THE REFRIGERATION INDUSTRY



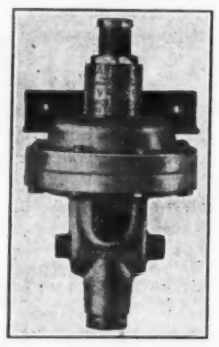
MAYFLOWER COMMERCIAL

The compressor of Proven Quality, Simple in Design, Rugged and Economical.

Representation available

Write for details

HARDY MANUFACTURING CO., INC., 100 Davis Ave., Dayton, Ohio



BAROSTAT VALVE

Snap Action - Positive Seal With LOAD COMPENSATING CHARACTERISTICS

Prevents freeze-ups on liquid coolers.
Assures dependable two temperature control.

Write for New Catalog and Prices

BAROSTAT Co. 48 Binford St., Boston, Mass.

TYPE KR—
5 MODELS

RANCOSTAT

—the—
Stainless Steel
Thermostat

Major improvements? Plenty of them! But—Ranco engineers also give major attention to details. For example—the tubing joint at the bellows. It's brazed—not soldered—in the Rancostat. Result: Far greater durability. Write for KR Bulletin.

The Automatic Reclosing Circuit Breaker Co.
Columbus, Ohio

CONDENSING UNITS AND COMPRESSORS FOR HOUSEHOLD REFRIGERATION BY

JOMOCO, INC.

A SUBSIDIARY OF THE
JOHNSON MOTOR CO.
Waukegan, Ill.
CABLE ADDRESS, JOMOCO-WAUKEGAN

REFRIGERATION PARTS

AN OLD ESTABLISHED SUPPLY HOUSE

Distributors for Nationally advertised refrigeration parts and supplies including such well known lines as—

Ranco, C-H and TAG Controls—U. S. Gauges
Ansul Gas—Belts—Detroit and Mayson Valves
Imperial Tools, Tubing and Pittings

BIG, NEW WHOLESALE CATALOG Free

WRITE FOR FREE CATALOG TODAY!

Burstein-Applebee Company
1012-14 McGEE ST. Dept. R5 KANSAS CITY, MO.

SUCTION PRESSURE REGULATOR

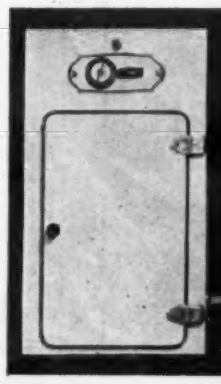
ACTUATED BY INLET SUCTION PRESSURE

FOR AMMONIA FREON METHYL

MODULATING TYPE
SEMI-STEEL LEAKPROOF BODY
STAINLESS STEEL PARTS
PACKLESS CONSTRUCTION
CONTROLLED PRESSURE RANGE
0—20 Lbs. Ga. and 15 to 50 Lbs. Ga.
SIZES: ¾" to 2" Including Pipe Tap
1½" to 6" Including Std. 4 Bolt Flanges

SPF

THE ELECTRIMATIC CORPORATION
2100 INDIANA AVE., CHICAGO, ILL.



DOMESTIC COOLING UNITS

Manufactured in sizes from 2 to 8 trays direct expansion type. Ideal for the assembler of Household Refrigerators or for replacements.

Attractive Prices

HAROLD L. SCHAEFER INC.
1620 Harmon Place Minneapolis, Minn

PATENTS

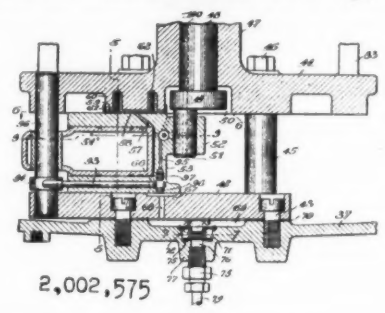
Issued May 28, 1935

2,002,553. HUMIDIFIER AND AIR WASHER. Herbert J. Somers, Detroit, Mich. Application March 2, 1932. Serial No. 596,195. 4 Claims. (Cl. 183—25.)

1. In an air conditioner of the class described, a housing having an air inlet and an air outlet, said inlet and said outlet being spaced apart; a humidifying unit located between said inlet and said outlet in the path of travel of the air; means for causing air to enter said housing at said inlet and pass therefrom through said outlet; spray delivery for delivering a spray of moistening medium on to said unit and against the direction of travel of the air through said housing; a hood for said housing; and a layer of sound deadening and moisture absorbing material covering the inner surface of said hood and exposed to the air traveling therethrough.

2,002,575. COMPRESSOR UNIT. Frederick J. Heideman, Rochester, N. Y. Application June 4, 1931. Serial No. 542,181. 14 Claims. (Cl. 230—175.)

1. In a gas compressor for circulatory refrigerating systems, the combination with an oscillatory piston, and a reciprocatory and oscillatory cylinder cooperating therewith and provided with an exhaust port and an intake port, of means in direct relative sliding contact with the cylinder for opening and colsing the intake port embodying a passage having a form substantially coincident with the path of the intake port as a result of the combined movements of the cylinder.



2,002,643. REFRIGERATOR. Charles L. Moorman, Chicago, Ill. Application July 7, 1932. Serial No. 621,133. 4 Claims. (Cl. 62—72.)

1. A refrigerator comprising an upper compartment for ice and a lower compartment for food, a shaft through which warm air ascends to said compartment for ice and a shaft through which cold air descends to said compartment for food, said last named shaft comprising the space between a side of said refrigerator and a partition forming a side of said compartment for food, said partition being so placed with respect to said upper compartment for ice that water resulting from the melting ice in said upper compartment will flow down said partition, and a container adapted to collect the water flowing down said partition and hold it in intimate contact with the underside of the bottom member of said lower compartment for food.

2,002,827. ROTARY COMPRESSOR. Jacob J. Morch, Port Credit, Ontario, Canada. Application Feb. 19, 1934. Serial No. 711,929. 2 Claims. (Cl. 230—140.)

1. A rotary compressor comprising a rotary cylindrical casing; a cylindrical piston disk rotatably mounted in the eccentric to the casing; a plurality of vanes hingedly connected with the internal periphery of the cylindrical casing; a plurality of spools journaled in the piston disk on axes pallel to that of the disk, each having an arc of its periphery disclosed at the periphery of the disk and each disk having a pocket slidably receiving one of the vanes; a stationary hollow shaft on which the piston disk rotates, the shaft having a radial port therein and the piston disk radial inlet passages adapted successively to communicate with said port, the said vanes each having an exit passage extending through one face thereof, and through its hinge in a direction parallel to its axis; radial conduits in the casing communicating at their outer ends with said passages; a stationary conduit for compressed air; and a stationary part concentric with the rotary casing and having a chamber therein with which the stationary conduit communicates, said chamber having a port therein with which the inner ends of the radial conduits successively communicate.

2,002,880. HUMIDIFIER. Edwin T. Brace, Springfield, Ohio, assignor to The Buckeye Incubator Mfg. Co., Springfield, Ohio, a corporation of Ohio. Application April 15, 1932. Serial No. 605,476. 5 Claims. (Cl. 261—91.)

3. In combination, a tank, an air chamber having an air inlet passage at the top and a laterally-disposed air outlet passage, a fan arranged to force a stream of air downwardly into said air chamber, means to lift water and discharge it laterally into said chamber across the path of said air, said air chamber having a sloping bottom constituting a drain member inclined across said air chamber for receiving and conveying the solid particles deposited by the incoming air after said particles have been wet by the water spray, and a container disposed at the lowest point of said drain member, said container being adapted to maintain said particles in a submerged condition yet to debar them from returning to the tank, whereby to prevent said particles from drying and re-entering the air stream and also from clogging the water supply to said lifting means.

2,002,950. PRESSURE GAUGE. Maximilian Klein, Sellersville, Pa., assignor to United States Gauge Co., Sellersville, Pa., a corporation of Pennsylvania. Application Sept. 27, 1932. Serial No. 635,103. 6 Claims. (Cl. 73—109.)

INSTALLATION OPERATIONS

A SERIES OF LESSONS OUTLINED FOR THE USE OF THE SERVICE MANAGER IN INSTRUCTING BEGINNERS IN INSTALLATION WORK

No. 9—Pinching the Tubing with the Pinch-Off Block

By K. M. Newcum

TOOLS NEEDED:

One pinch-off block, one flare block.

MATERIALS NEEDED:

One piece of tubing any size.

PROCEDURE:

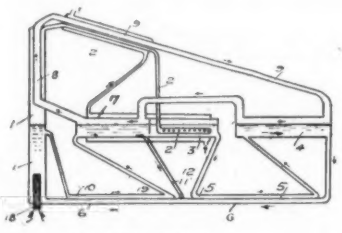
1. Mark the tubing where the pinch is to be made.
2. Install pinch-off block over tubing. Be sure that the tubing is straight, where the pinch is to be made.
3. Tighten pinch-off block with thumb screws slowly and carefully until the tubing is completely closed. The pinch should be square or at right angles with the tubing.
4. Leave pinch-off block in place on the tubing until the repair has been made.
5. Remove pinch-off block, being careful not to disturb or disrupt the tubing by bending it as it has been weakened at the point of the pinch and will not stand any abuse.
6. Install flare block over pinch on tubing at right angle to the pinch or flattened surface. Tighten flare block slowly and carefully to reshape the tubing and remove the pinch.
7. Remove the flare block and inspect the surface of the tubing. It will be impossible to get the tubing perfectly round, but the tubing should present an open appearance.
8. Check with instructor.

Note: Any pinch that is made in any line should be removed by installing a coupling or fitting in its place.

3. A pressure gauge comprising a socket member, a bracket supporting the moving parts of said gauge having a part lapping said member, a bushing having a head formed to act as a spacer securing said bracket part to said member, a dial disposed against said spacer, and means to secure said dial to said bushing independently of said bracket part.

2,002,958. ABSORPTION REFRIGERATING APPARATUS AND METHOD. Guido Maiuri, London, England, assignor, by mesne assignments, to Electrolux Servel Corp. a corporation, of Delaware. Application Feb. 25, 1928. Serial No. 256,993. In Great Britain Feb. 25, 1927. 11 Claims. (Cl. 62—119.5.)

8. In a cycle of refrigeration including the evaporation from solution into inert gas, absorption therefrom, generation, and



reabsorption of refrigerant fluid, in which cycle absorption liquid is circulated through said portions thereof in series, that improvement which comprises circulation of additional absorption liquid through the absorption and generation portions of said cycle independently of the evaporation portion.

2,003,050. BEER CONTAINER AND COOLER. Harry Iselin, Racine, Wis. Application Sept. 15, 1933. Serial No. 689,594. 6 Claims. (Cl. 62—32.)

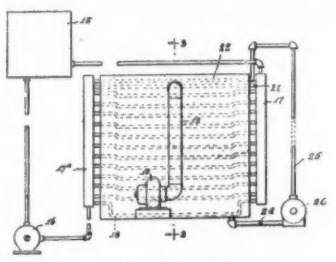
1. A device for cooling the contents of a barrel comprising a container for receiving the entire barrel said container having an open upper receiving end, clamping means carried by the container for engaging and centering the barrel within the container, the container being adapted to receive a refrigerant, and a cover plate disposed within the upper end of the container around the barrel to expose the upper end to view and to permit the contents thereof to be drawn off.

2,003,060. THERMOSTATIC CONTROLLING DEVICE. William S. Thomas, Montoursville, Pa., assignor of one-half to Ernest L. Heckert, Montoursville, Pa. Application April 2, 1934. Serial No. 718,711. 11 Claims. (Cl. 236—32.)

1. In a thermostatic controlling device, a movable diaphragm operatively connected to the element to be controlled, an expansion chamber communicating with one side of said diaphragm and adapted to be heated by a medium the temperature of which varies in accordance with the position of the element being controlled, said expansion chamber containing a quantity of expansible fluid medium and pressure of which varies with changes in the temperature of the medium by which the chamber is heated and tends to move said diaphragm in one direction, means for opposing the pressure of said fluid medium against said diaphragm and tending to move the latter in the opposite direction, and means for automatically establishing communication between said expansion chamber and a source of said fluid medium each time that the pressure of said medium within said chamber reaches a predetermined point.

2,003,214. FREEZING APPARATUS. Edward Joseph Murphy, Lynbrook, N. Y. Application Oct. 5, 1931. Serial No. 567,009. 5 Claims. (Cl. 62—114.)

1. In a freezing apparatus, a cabinet, a plurality of pans arranged in said cabinet in superposed relation and spaced



from each other, said pans being of a width corresponding to the width of the cabinet but of a length less than the cabinet and arranged with alternate pans in contact with the same end wall of the cabinet and succeeding pans in contact with opposite end walls to provide a sinuous path for air currents over succeeding pans, a refrigerant-containing coil disposed in each pan, a liquid heat exchange medium disposed in each pan in contact with the coil therein, and air circulating means for extracting the air from the cabinet above the topmost pan and redelivering it below the lowermost pan.

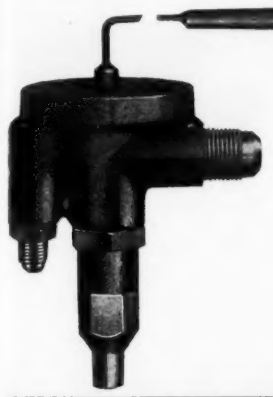
2,003,274. REFRIGERATION CABINET. Philip A. Celander, Bloomington, Ill., assignor to Williams Oil-O-Matic Heating Corp., Bloomington, Ill., a corporation of Illinois. Application March 29, 1934. Serial No. 717,908. 1 Claims. (Cl. 62—89.)

A refrigerating cabinet for a mechanical refrigeration system, a refrigerated compartment therin normally closed by a hinged air-tight door, a cooling element of the system mounted in said compartment, a casing for removably containing a plurality of ice cube trays mounted within and supported by the cooling element, a plate mounted upon the tray containing casing having an opening therein for the insertion and removal of the trays therethrough, a closure for said opening, a spring-actuated hinge on the side adjacent the door hinge between the closure and plate normally maintaining the opening closed, and means actuated by the opening of the closure sufficiently for the removal of a tray to hold the closure in that position against the tension of the spring and means on the free side of the closure adapted to be engaged by the inner surface of the compartment door in closing to automatically free the closure to cover the plate opening.

REISSUE

19,595. REFRIGERATION APPARATUS. Edward T. Williams, Pelham Manor, N. Y. Original No. 1,947,574, dated February 20, 1934. Serial No. 410,026, Nov. 27, 1929. Application for reissue Nov. 19, 1934. Serial No. 754,123. 45 Claims. (Cl. 62—115.)

40. A refrigerating system including condensing and evaporating means connected in series, and means adapted to operate upon the occurrence of a leak in any portion of said system to subdivide the system into a number of isolated sections.



PEERLESS THERMAL EXPANSION VALVES

for Methyl Chloride, Sulphur Dioxide, Freon, and Ammonia

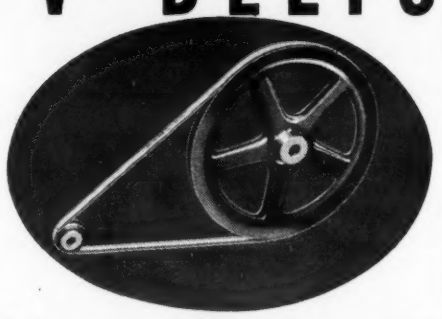
1. No bellows to leak.
2. No possibility of moisture condensation interfering with valve action.
3. Tried and proven in every section of the country.
4. Competitively priced.

PEERLESS ICE MACHINE CO.

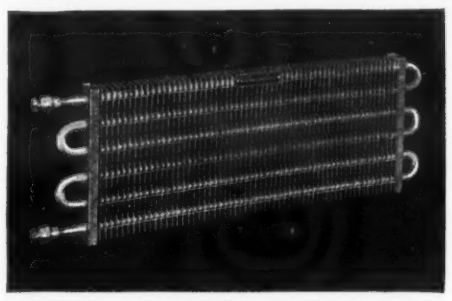
CHICAGO 515 W. 35th St. — TWO FACTORIES — NEW YORK 43-00 36th St., L.I.C.

DAYTON V•BELTS

There is a Dayton V-Belt made especially for all makes and types of refrigerators, washing machines and other appliances. A stock is available near you. Send for price list and name of your nearest distributor.



THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO
The world's largest manufacturer of V-Belts



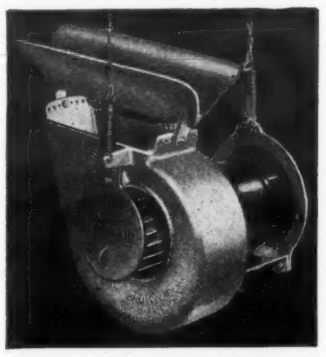
Rempe "FIN COIL" Co.

Steel Copper Aluminum

340 N. Sacramento Blvd.
Chicago, Illinois — Kedzie 0483

Pipe Coils and Bends — Send for catalog, price list and sample

Methyl Chloride, Freon, Sulphur Dioxide and Ammonia



ACTION-AIR

A diffused air system for Walk-In Coolers. No changes required in present set-up. Endorsed by National packers, abattoir companies, wholesalers and retailers. Three years of successful operation.

Shrinkage is of paramount importance in the meat industry.

The BROWN Corp.
100 Bellevue Ave., Syracuse, N. Y.

Certain territories open for good distributors

RACK'S KOILS KOOL

THE TRADEMARK OF FOUR
PACE SETTERS
IN COIL EFFICIENCY

SUR-E-FEX — Fin Coils
FAN-E-FEX — Diffusing Units
HUM-E-FEX — Non-Dehydrating Coils
AIR-E-FEX — Air-Conditioning Units

SEND FOR NEW CATALOG DESCRIBING THESE SENSATIONAL DEVELOPMENTS

REFRIGERATION APPLIANCES, INC.
H. J. KRACKOWIZER, Pres.
1342 WEST LAKE ST., CHICAGO

Group Subscription Rates

The following special rates are for PAID-IN-ADVANCE subscriptions only in the United States and Possessions and Pan-American Postal Union Countries. Charge orders are billed at the single-subscription rate, regardless of number. Papers will be mailed to individual addresses.

	Electric Refrigeration News (weekly)	1935 Refrigeration Directory and Market Data Book (2 volumes)	Both Electric Refrigeration News and Refrigeration Directory
1 subscription	$3.00	$5.00	$6.50
5 or more each	2.75	4.50	6.50
10 or more each	2.50	4.00	6.50
20 or more each	2.25	3.50	5.75
50 or more each	2.00	3.00	5.00
75 or more each	1.75	2.50	4.25
100 or more each	1.50	2.00	3.50
For All Other Countries (Except Canada)			
1 subscription	$5.00	$6.00	$9.00
5 or more each	4.75	5.50	8.50
10 or more each	4.50	5.00	8.00
20 or more each	4.25	4.50	7.50
50 or more each	4.00	4.00	7.00
Canadian Rates (including tariff of 5 cents per copy on the News)			
1 subscription	$6.00	$6.00*	$11.00*
5 or more each	5.75	5.50*	10.50*
10 or more each	5.50	5.00*	10.00*
20 or more each	5.25	4.50*	9.50*
50 or more each	5.00	4.00*	9.00*

*Canadian subscribers are required to pay a tariff and excise tax on the Directory and Market Data Book which amounts to $2.59. These extra charges on books will be collected by the Canadian postoffice at the time of delivery.

Subscription Order

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich. Date.....

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues).
☐ Send the 1935 Refrigeration Directory and Market Data Book (2 volumes).
☐ Enclosed find remittance. (See rates above.)

Name .....

Attention of
In Care of .....

Street Address .....City and State.....

We sell the .....refrigerator and .....
(Please indicate other products or principal line of business.)
6-12-35

QUESTIONS

Nema Sales

No. 2284 (Distributor, Tennessee)—"We desire to secure an accurate record of the total number of wholesale units sold by N.E.M.A. members from March, April, May, June, and July, 1934.

"We desire this information so as to arrive at the percentage of the total business done each year by N.E.M.A. companies and we will appreciate this information by return mail as it is essential that we have same by Monday."

Answer: The February 20, 1935 issue of ELECTRIC REFRIGERATION NEWS shows monthly sales of household refrigerators by Nema companies only, in comparison with sales by all industry manufacturers. These figures represent sales by the manufacturers to distributors and dealers. This page also contains a chart showing the sales trend for Nema and for the industry over five years, 1930 through 1934.

Defrosting Trays

No. 2285 (Distributing Company, Iowa)—"Can you give us names of manufacturers who can furnish us a complete line of glass defrosting trays, various sizes and dimensions for household refrigerators.

"We have written those listed in your directory, however, cannot locate a manufacturer who can supply a complete line.

"Will you please be so kind as to let us have this list at the earliest possible time."

Answer: We have no record of manufacturers of glass defrosting trays other than those listed in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

You might be able to obtain such trays for various makes of refrigerators by writing directly to the manufacturers making the various models.

Average Price of Unit

No. 2286 (Statistical Bureau, New York)—"I should like very much to obtain, if possible, the average price per unit sale of refrigerators for the years '33 and '34 and '35 to date. If you do not have this data could you suggest where it might be available?

"I should appreciate any information you can give me along these lines."

Answer: We have estimated that the average unit price for household electric refrigerators in 1933 was $170.00, and in 1934, $172.00. We have not as yet attempted to make estimates covering retail price to date for 1935.

Wayne & Kulair Parts

No. 2287 (Service Company, New Jersey)—"Will you please give me name and address of concerns making parts for Wayne refrigerators, also Kulair refrigerators?

"I have several of these compressors to rebuild and would like to know where to get parts."

Answer: Write to Wayne Oil Burner Co., Glasgow Ave., Ft. Wayne, Ind., for parts for Wayne compressors. This company is a successor to the concern originally manufacturing these refrigeration units.

You might also be able to obtain parts for Wayne machines from Apex Electrical Mfg. Co., 1070 E. 152nd St., Cleveland, Ohio, which took over certain of the refrigeration assets of the original Wayne Co.

For Kulair parts, write to Iceless Refrigeration Accessories Co., 2401 Chestnut St., Philadelphia, Pa.

List of Distributors

No. 2288 (Manufacturer, Ohio)—"We have been subscribing to your paper for some time and are now in need of some information, which we hope you will be able to give us.

"What we would like to have, if at all possible, is a list of refrigerator distributors, stating makes of refrigerators which they handle and any other information as to territory covered, et cetera, which might be available. Assuring you that anything which you may have to offer, will be greatly appreciated."

Answer: We cannot furnish you with such a list.

Counter Freezer

No. 2289 (Sales Representative, Kansas)—"I have a prospective buyer for an 'Electric Ice Cream Machine' preferably a five-gallon machine with storage capacity of approximately forty gallons.

"I want this machine for a store that has operated under the present management for 18 years, and former management for 25 years.

"This store has a large select clientele, and would be an ideal location, where a machine would serve as a demonstrator for sales work.

"I have been interested for some time indirectly in automatic ice cream freezing equipment, and have now decided to become active in the sale of equipment of this character. I am thoroughly qualified by education and experience and would like to represent a reliable firm that has a first class machine that can be sold at a nominal price. To facilitate matters will you kindly request a few manufacturers to get in touch with me immediately."

Answer: Manufacturers of ice cream freezers are listed on page 203 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Majestic Service Data

No. 2290 (Service Firm, Iowa)—"Am writing you in regard to a Majestic hermetically sealed unit. We have been doing service work for several years here. This is a domestic unit owned by a party here in town. I would like to know if it is possible for you to offer me some information on this through your magazine. If not, I presume this unit will have to be sent in to the Grunow people, at Dubuque, Iowa, I believe.

"Following is the Cabinet Serial No. 41348, Unit Serial No. 26418, Cabinet Model No. 150. This unit is about three years old.

Answer: ELECTRIC REFRIGERATION NEWS published service information on the Majestic hermetically sealed unit in the August 16 issue.

The May 29, 1935 issue of ELECTRIC REFRIGERATION NEWS also contains an article on service by Mr. K. M. Newcum which deals with the operation of the Majestic unit.

For service or replacement parts on the Majestic unit address Frank S. McKey, trustee, Grigsby-Grunow Co., 5801 Dickens Ave., Chicago, Ill.

Market Saturation

No. 2291 (Federal Government Department, District of Columbia)—"I am interested in getting any available data concerning the proportion of homes equipped with ice refrigeration and the proportion equipped with mechanical refrigeration in identical cities. The Division of Marketing Research of the Bureau of Foreign and Domestic Commerce suggested that you would be the best source for such information.

"I have seen the data published by the Department of Commerce in its recently made Real Property Inventory. As you doubtless know this contains no information concerning ice refrigeration.

"Any information that you may be able to give me as to the availability of such data will be appreciated."

Answer: We do not know the proportion of homes using ice refrigeration as compared with those using mechanical refrigeration.

The only figures we have concerning the ice refrigeration industry are those covering sales of ice boxes in each year since 1911. Our estimates covering sales of household electric refrigerators are available by years since the beginning of the household refrigerator industry.

This information will be included in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK which is now being published.

Bellows Shaft Seals

No. 2292 (Service Firm, Colorado)—"At the suggestion of the Kelvinator Company of Detroit, Mich., we are asking you to give us the addresses of specialty manufacturing companies that manufacture complete bellows type shaft seals, similar to the kind used in modern refrigerators.

"We wish to have them built to our specifications and we would like to contact some manufacturers that are equipped to build them."

Answer: Manufacturers of bellows-type shaft seals are listed on page 272 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

'Jumbo' Stein Washer

No. 2293 (Dealer, Ohio)—"We are enclosing our order for a 1935 REFRIGERATION DIRECTORY. We desire to know where we can buy the product known as 'Jumbo Stein Washer.'

"We understand through certain channels, it is manufactured by the company that is associated in some way with Bishop and Babcock Sales Co. of Cleveland, Ohio.

"We fail to locate this in the 1934 DIRECTORY. We are writing you along with this order for the 1935 DIRECTORY so that we shall have the information in any event we are unable to locate information in the new directory."

Answer: Write Bishop & Babcock Sales Co., 4901 Hamilton Ave., N. E., Cleveland, Ohio.

Cabinet Manufacturers

No. 2294 (Manufacturer's Representative, California)—"Will you please advise me address of manufacturers of cabinets, suitable for domestic electric refrigeration, who would be interested in selling in quantities for a manufacturing program."

Answer: Manufacturers of cabinets for household electric refrigerators are listed on page 226 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

ENGINEER, designer, first class layout man for electric household refrigeration and refrigerated air conditioning. Must be graduate of mechanical college, understand and apply all theories of refrigeration. Great opportunity for right man. State in typewritten answer education, experience, nationality, age and salary expected. Box 709, Electric Refrigeration News.

EQUIPMENT FOR SALE

ISOBUTANE: We offer purest and dryest Isobutane for the most exacting scientific purposes; in your 80 lb. cylinders at $0.75, in our 120 lb. cylinders, $0.70, in small lots at $1.00 per pound. The Standard Refrigeration Co. of Pittsburgh, 1148 Dohrman St., McKees Rocks, Pa.

DEALERS ATTENTION! We have 1,500 new, used and reconditioned electric and gas refrigerators of nationally known makes, at real low prices for resale. Guaranteed. Territory protection. Also slightly used twin Frigidaire, Kelvinator, Universal, Norge, ¼, ⅓, ½, ¾, 1 and 1½ H. P. water and air cooled commercial compressors. Two tray Kelvinator, Frigidaire, Zerozone coils $1.75 each. Write for information. Macklam Refrigerator Sales Corp., 220 West Huron St., Chicago.

ATTENTION: Dealers and Service Men. Rebuilt Mayson expansion valves, $1.00. Rebuilt American Radiator expansion valves, $1.65. Ranco controls, all types, $1.75. Frigidaire and Kelvinator dry and flooded coils $2.50 up. Bargains in Mullins Evaporators. Rebuilt domestic and commercial units $12.50 up; all sizes from ¼th HP to 1½ HP; thoroughly rebuilt, fully reconditioned. Evaporators all sizes and types $2.50 up. Federal Refrigerator Corp., 437 11th Ave., New York, N. Y.

FRANCHISE AVAILABLE

DISTRIBUTORS—We are one of New York's largest liquidators of reconditioned and surplus stock brand new refrigerators. We guarantee A-1, expertly reconditioned merchandise which you can re-guarantee to your customers without hesitation or reservation. All brand new refrigerators are priced to assure distributors a quick sale. Large selections of nationally known makes in all sizes always in stock. Write for catalogue containing specifications and prices for domestic and export trade. When buying reconditioned refrigerators, look for the label, "Remanufactured by Federal Refrigerator Corp., 437 11th Ave., New York." We also are seeking resident buyers to sell us large quantities of new and used refrigerators and parts. Highest prices paid. Exclusive territory given right parties.

BUSINESS FOR SALE

BUSINESS For Sale, an unusual opportunity, established five years, servicing, installing, buying and selling new and used equipment, mostly commercial, also conducting service school which offers wonderful possibilities. Four story modern building, heart of city, low rental. B. L. Williams, 1232 14th St. N. W., Washington, D. C.

SERVICE

ATTENTION: Refrigeration Service Men. Service sheets available for opening and servicing the Majestic hermetically sealed refrigerator unit. Price, $2.00. Interstate Machine Works, 111 S. 11th St., Boise, Idaho.

REPAIRS

GENERAL ELECTRIC Monitor Tops repaired regardless of condition. Burn outs, gas leaks, stuck ups, high wattage—anything and everything. All work guaranteed. Quick service. Ship units freight prepaid. Average repair charge $10.00. Hermetic Refrigerator Repair Service, 200 West 34th St., New York, N. Y.

HALECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn, Ranco, Tag., etc. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
DETROIT - - - MICHIGAN

LARKIN COILS *for* **AIR CONDITIONING**